2Wire Gateway User Guide

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5100-000326-000 Rev C 08/2007

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Introduction

The 2Wire gateway allows you to create a network with your computers and peripheral devices. Following are just a few of the benefits derived from using the 2Wire gateway to network your home or office.

High performance integrated modem. 2Wire's technology improves DSL[1] performance, especially for homes further away from the local exchange. It also minimizes common interference found when other devices (such as dimmer switches or fluorescent lighting) are in contact with the DSL line.

Super-fast router. The 2Wire gateway's router provides the fastest data transfer speeds available between your network and the Internet. The high-performance router distributes data seamlessly to all of the computers on your network, without a dramatic loss of performance or speed.

Professional-grade firewall. The 2Wire gateway firewall includes both standard NAT/PAT security and Stateful Packet Inspection to defend against Denial of Service Internet attacks**.**

Flexible networking. The 2Wire gateway includes a variety of home networking technologies in one box: Ethernet, direct USB, and HyperG wireless[2]. Use any or all of the following technologies to create a network with your computers and peripherals.

Networking Technology Overview

Ethernet. Ethernet is a local area network (LAN) technology that transmits information between computers at speeds of 10 or 100 Mbps. 2Wire gateways have either 1 or 4 Ethernet ports for directly connecting computers or devices. If your home or office is wired for Ethernet, you can use the Ethernet interface(s) on the gateway to create a broadband network.

USB. The 2Wire gateway's USB 1.1 port allows you to directly connect a computer or other network-ready device.

Wireless. The 2Wire gateway includes an integrated wireless access point, which allows users to roam wirelessly throughout the home or office. 2Wire's high-powered wireless technology virtually eliminates wireless "coldspots" in the home. The 2Wire gateway's high power 400mW transmitter ensures that users benefit from increased wireless bandwidth throughout the coverage area. In addition, the 2Wire gateway employs a special triple antenna design. The third antenna is used only for transmitting packets, thus mitigating the power loss associated with switching the antenna use back and forth between transmit and receive. This results in greater access point sensitivity, as antenna placement can be better optimized with a dedicated set of receive-only antennas.

1. The 200 series gateways connect via Ethernet.
2. Some interfaces are not available on specific models.

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System Tab

This chapter describes the 2Wire gateway System features.

Note: 2Wire recommends that you use Internet Explorer 5.5 (or higher) or Netscape 6 (or higher).

Viewing Your System Summary

The System Summary page provides general information and links to your system's most commonly used features.

To access the System Summary page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the System tab to open the System Summary page.

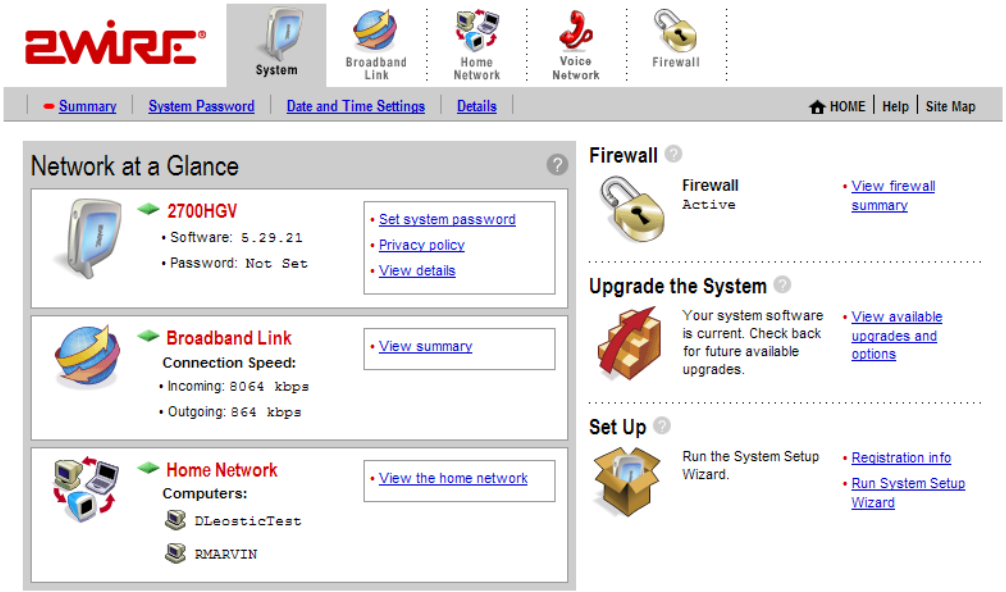

Figure 1. System Summary Page

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Network at a Glance Panel

The Network at a Glance panel provides a summary of the System, Broadband Link, and Home Network states of your gateway.

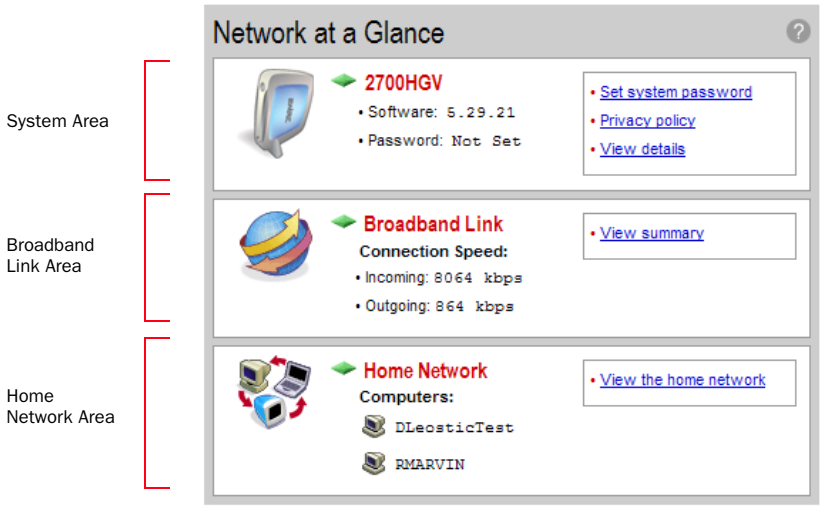

Figure 2. Network at a Glance Panel

System Area of the Network at a Glance Panel

The System area of the Network at a Glance panel displays your 2Wire gateway model name, the version of gateway software that you are using, and the status of your gateway password.

The diamond symbol in this area indicates the gateway's **POWER** light status and corresponds to the Power light on the front of your gateway.

The following table shows a list of possible **POWER** light states and their associated meanings:

Power Light	Condition
Off	Power is not being supplied to the system. The power supply is not plugged in correctly, or the power adapter has malfunctioned.
Blinking Green	The system is performing a self test.
Solid Green	Power is on.
Blinking Orange	The gateway is undergoing a software upgrade.
Solid Red	System error. Contact Technical Support.

If you have not set a system password, the Set system password link displays. If you have set a password, the Change system password link displays. You must enter the system password whenever you change system settings.

Note: For additional information, refer to "Setting a System Password" on page 6.

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Click the Privacy policy link to review the 2Wire privacy policy.

Broadband Link Area of the Network at a Glance Panel

The Broadband Link area of the Network at a Glance panel displays the overall status of your gateway's physical connectivity.

The diamond symbol in this area indicates the overall status of the broadband link and corresponds to the **Internet** light on the front of your gateway.

The following table shows a list of possible **BROADBAND LINK** light states and their associated meanings:

Broadband Link Light	Condition
Off	The gateway has been unable to detect a DSL signal. DSL signal detected; the gateway is attempting to train.
Solid Green	The gateway is fully connected to your broadband service(s).

Connection Speed displays the broadband speed for which DSL is configured by your ISP. Both the Incoming (or Downstream — from your service provider to your system) and Outgoing (or Upstream — from your system to your service provider) connection rates are shown. The actual throughput of your Internet connection rate (such as downloading a file from a Web site) will be somewhat less, because of the overhead required to send information over the Internet.

Accessing the Broadband Link Summary Page

The Broadband Link Summary page provides general information about the current status of your broadband link connection and your system configuration. To access the Broadband Link Summary page, click the **Broadband Link** icon or the View summary link.

Launching the 2Wire Bandwidth Meter

The Bandwidth Meter measures the maximum data throughput obtained from 2Wire's Web site to your system. Because it tests the speed over the Internet, your results may vary, depending on Internet conditions.

To launch the 2Wire Bandwidth Meter, click the Test connection speed link.

Home Network Area of the Network at a Glance Panel

The Home Network area of the Network at a Glance panel displays your system's **LOCAL NETWORK** light status and a list of the devices currently connected to your local network.

The diamond symbol in this area indicates the overall status of the network and corresponds to the **Ethernet**, **USB**, or **Wireless** light on the front of your gateway.

Ethernet, USB, or Wireless Light	Condition
Off	The gateway is powered off or booting up.
Solid Green	Device(s) connected via Ethernet, USB, or Wireless.

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Accessing the Home Network Summary Page

The Home Network Summary page displays information about the devices installed on your network. To access the Home Network Summary page, click the View the home network link.

Enabling Enhanced Services

2Wire provides a suite of enhanced services: Web Remote Access, Firewall Monitor, and Parental Controls. If your service provider offers these enhanced services, links to set them up are available on the gateway Home page. Following is a brief description of these services.

Web Remote Access

The Web Remote Access enhanced service allows you to access your home computer files from remote locations using any standard Web browser. Web Remote Access authenticates and encrypts access between the Web browser and the 2Wire gateway, enabling you to securely access and download important files or manage other enhanced services such as Parental Controls or Firewall Monitor.

You can optionally define a unique Web Domain Name during setup (for example, http://myname.accessmyhome.net), making it easy for users that are allowed to access the home network to manage the gateway when away from the home.

For additional information, please refer to the *Web Remote Access User Guide*.

Firewall Monitor

The 2Wire Firewall Monitor enhanced service extends the professional-grade firewall capabilities of your 2Wire gateway by continuously assessing threats to your home network. Firewall Monitor allows you to:

- Automatically download updates to your firewall software to protect against new threats.
- Receive on-screen notification to alert you of network attacks.
- Review details about attacks blocked and the source of the attacks.

For additional information, please refer to the *Firewall Monitor User Guide*.

Parental Controls

The 2Wire Parental Controls enhanced service offers two features that allow parents to maintain control over what their children can access on the Internet, and how often: Content Screening and Internet Access Controls.

Content Screening allows you to protect your children from Websites with questionable content. You control what sites or types of sites your child can and cannot access. Internet Access Control gives you power to decide when your child can use the Internet and allows you to restrict Internet access by day of week and time of day.

For additional information, please refer to the *Parental Controls User Guide*.

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Setting a System Password

Setting a system password protects your gateway settings from being modified or changed by someone who has not been given permission to do so. After setting a system password, you will be required to enter it whenever you attempt to access a gateway configuration page — for example, if you try to change the gateway's broadband connection settings or upgrade the gateway software. If a password has not been set, a reminder notice is displayed when you attempt to access pages where settings can be changed.

To set your system password:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **System** tab.
- Click the System Password link in the System area of the Network at a Glance panel to open the Edit System Password page.

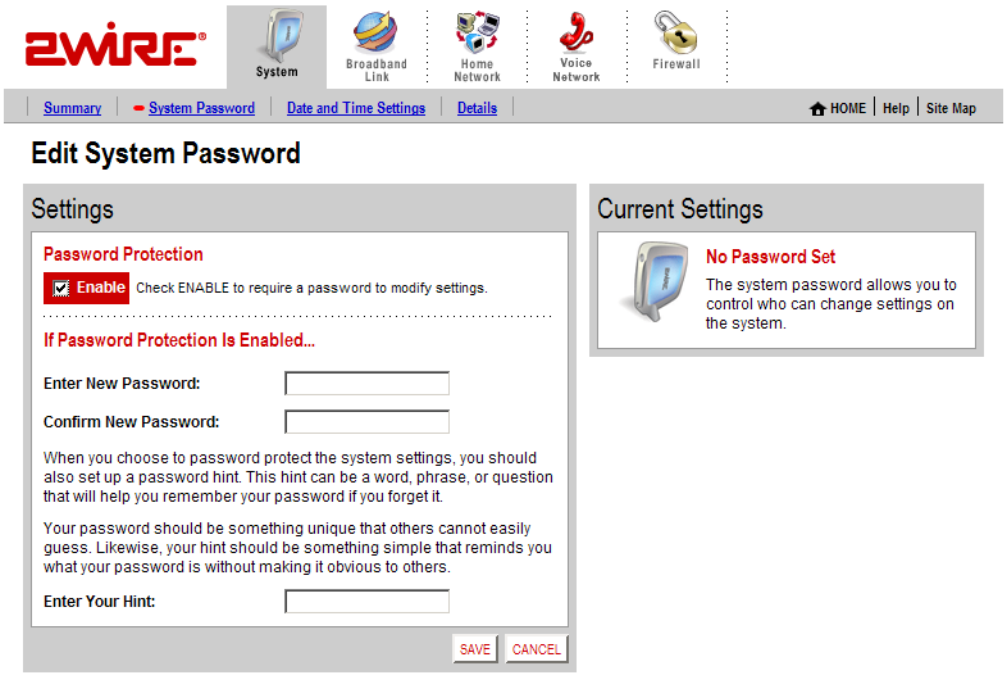
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
System Password
Date and Time Settings
Details
HOME
Help
Site Map
Edit System Password
Settings
Password Protection
Enable
Check ENABLE to require a password to modify settings.
If Password Protection Is Enabled...
Enter New Password:
Confirm New Password:
When you choose to password protect the system settings, you should also set up a password hint. This hint can be a word, phrase, or question that will help you remember your password if you forget it.
Your password should be something unique that others cannot easily guess. Likewise, your hint should be something simple that reminds you what your password is without making it obvious to others.
Enter Your Hint:
SAVE
CANCEL
Current Settings
No Password Set
The system password allows you to control who can change settings on the system.

Figure 3. Edit System Password Page

1. In the Settings panel, click the **Enable** checkbox.
2. In the Enter New Password field, enter your password.
3. In the Confirm New Password field, re-enter your password.

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4. *Optional:* In the Enter Your Hint field, enter a hint.
   A hint is a word, phrase, or question that reminds you what the password is. There is an I forgot the password link on the password entry page. When you click this link, it shows you your hint and allows you to enter your password.

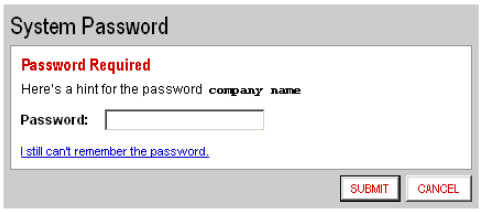
5. Click **SAVE**.

To disable password protection, deselect the **Enable** checkbox and click **SAVE**.

To safeguard your network against unauthorized users, it is also a good practice to periodically change your password.

Resetting the System Password

If you forget your password and still cannot remember it after seeing your hint, click the I still can't remember the password link.



The Reset System Password page opens.

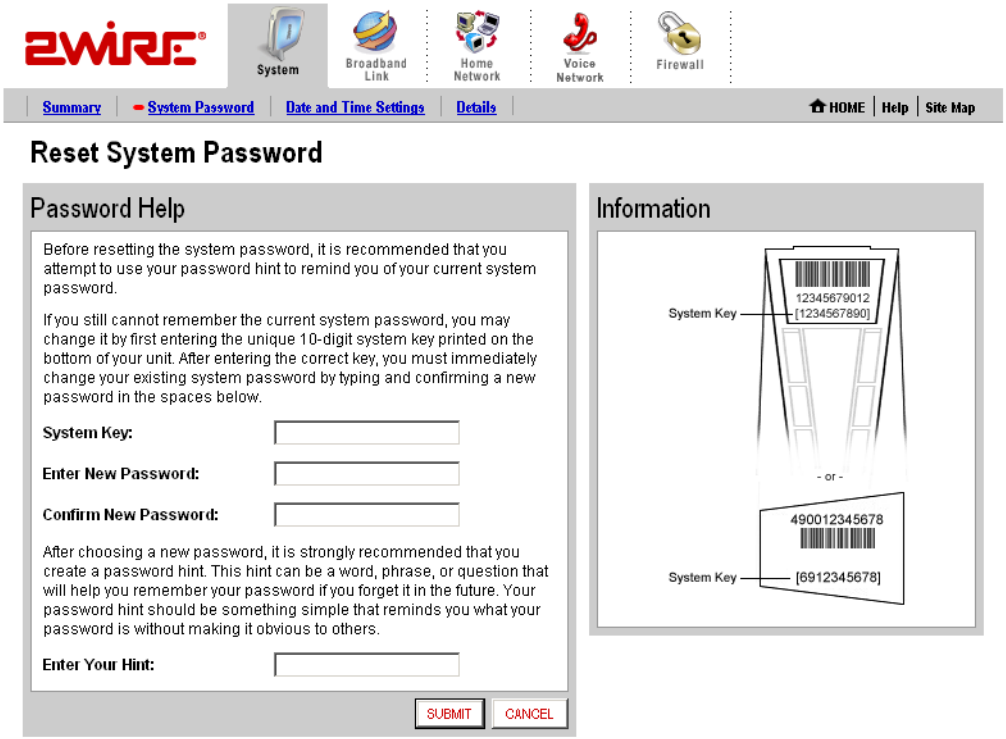

2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
System Password
Date and Time Settings
Details
HOME
Help
Site Map
Reset System Password
Password Help
Before resetting the system password, it is recommended that you attempt to use your password hint to remind you of your current system password.
If you still cannot remember the current system password, you may change it by first entering the unique 10-digit system key printed on the bottom of your unit. After entering the correct key, you must immediately change your existing system password by typing and confirming a new password in the spaces below.
System Key:
Enter New Password:
Confirm New Password:
After choosing a new password, it is strongly recommended that you create a password hint. This hint can be a word, phrase, or question that will help you remember your password if you forget it in the future. Your password hint should be something simple that reminds you what your password is without making it obvious to others.
Enter Your Hint:
SUBMIT
CANCEL
Information
System Key
12345679012
[1234567890]
- or -
490012345678
System Key
[6912345678]

Figure 4. Reset System Password Page

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To obtain access to your system:

1. In the System Key field enter the 10-digit system key located on the bottom of your gateway.
2. In the Enter New Password field, enter a new system password. In the Confirm New Password field, re-enter the system password.
3. In the Enter Your Hint field, enter an appropriate hint as described under “Setting a System Password” on page 6.
4. Click **Submit**.

Changing Your Time Zone Settings

The 2Wire gateway sets the time automatically using time servers on the Internet. It retrieves date/time information in Greenwich Mean Time (GMT). Your local time is set using the Time Zone setting you configured when you set up your system. If your Time Zone is incorrectly set, you can change it in the Edit Date and Time Settings page.

To change your time zone settings:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **System** tab.
- Click the Date and Time Settings link in the System area of the Network at a Glance panel to open the Edit Date and Time Settings page.

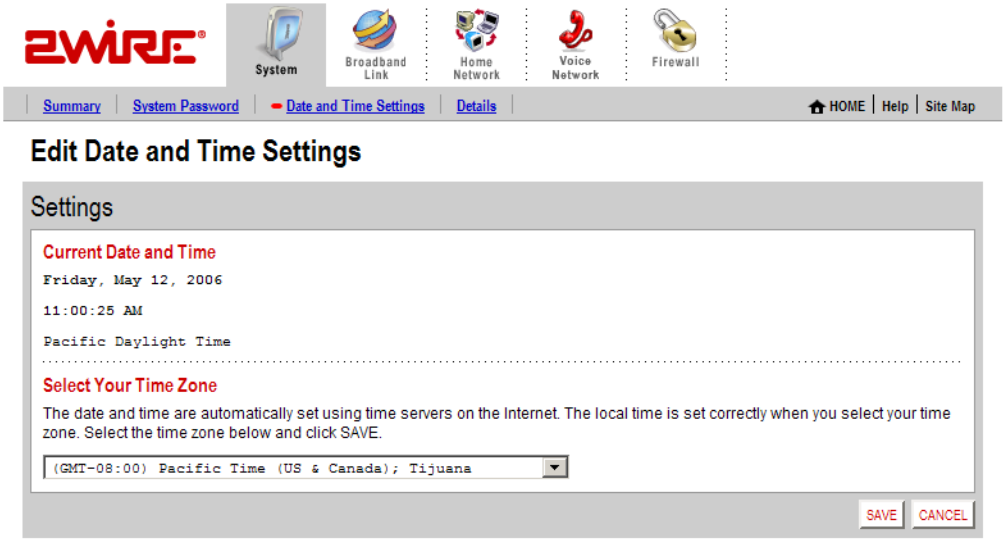

Figure 5. Edit Date and Time Settings Page

1. From the drop-down menu, select the time zone.
2. Click **SAVE**.

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Viewing System Details

The System Details page provides information about your gateway, any enhanced services you may have, and provides a link that you can use to restart your system.

To view the System Details page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **System** tab.
- Click the View details link in the System area of the Network at a Glance panel to open the View System Details page.

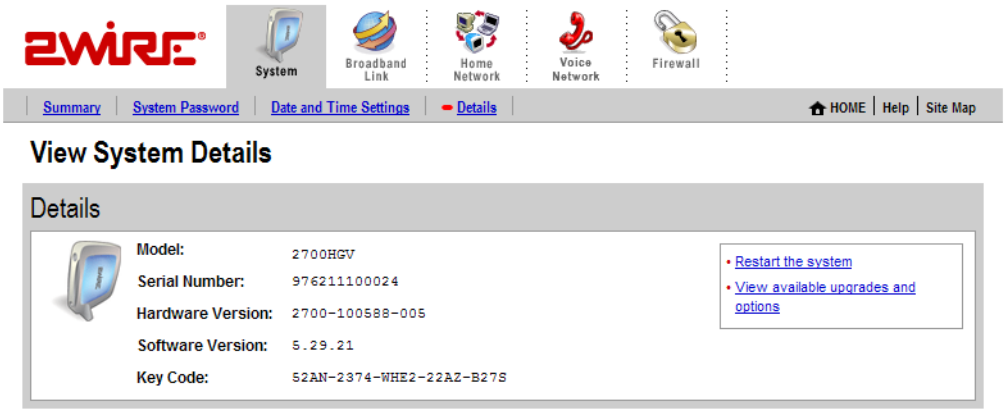
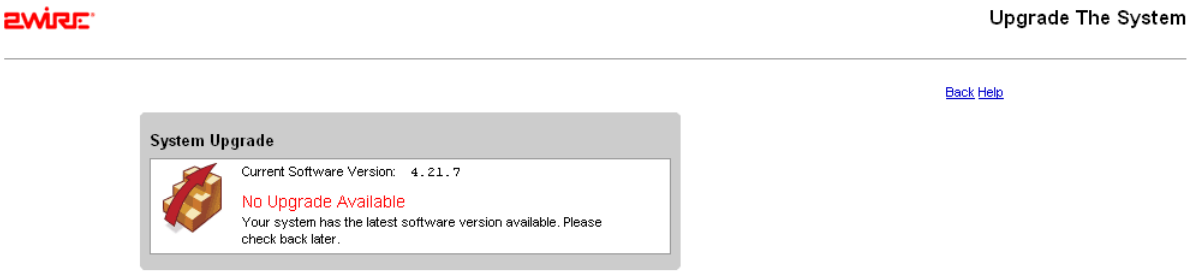


Figure 6. View System Details Page

The Restart the system link restarts your system. Your network connections and your broadband connectivity will be briefly disrupted until your system restarts and broadband connectivity is re-established with your broadband service provider.

The View available upgrades and options link accesses a page that displays available software upgrades or enhanced services. If your gateway is running the latest software or enhanced services are not available, the following message displays.


Upgrade The System
Back Help
System Upgrade
Current Software Version: 4.21.7
No Upgrade Available
Your system has the latest software version available. Please check back later.

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Broadband Link Tab

This chapter describes the 2Wire gateway Broadband Link features, and provides detailed instructions on how to customize your broadband settings.

Viewing Your Broadband Link Summary

The Broadband Link Summary page provides general information about the current status of your broadband link connection and your system configuration.

To access your Broadband Link Summary:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Broadband Link** tab.
- Click the Summary link under the tab to open the View Broadband Link Summary page.

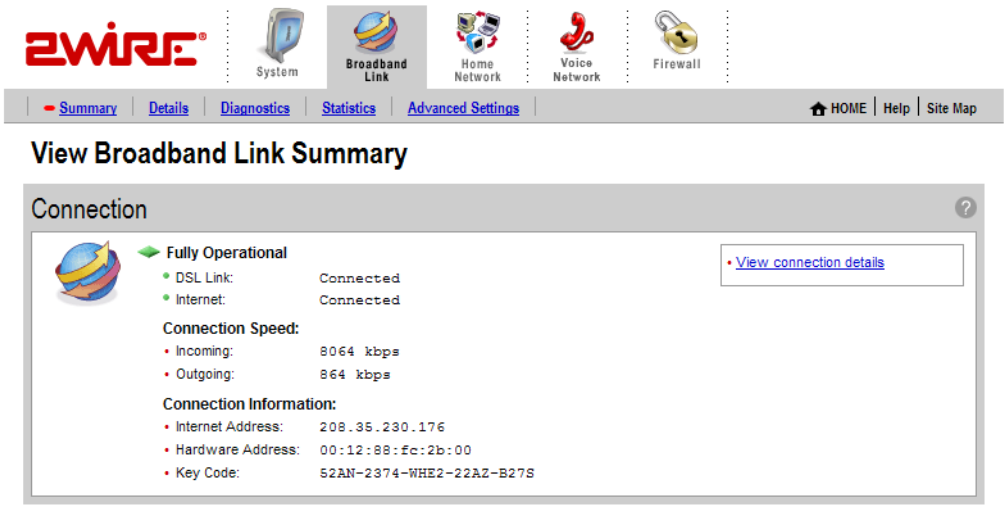

Figure 7. View Broadband Link Summary Page

The Connection panel shows information about your gateway's connection to the Internet. The elements displayed will vary, depending on your gateway model and the type of broadband service you have.

Connection Status

There are two ways you can check the current status of your gateway's broadband connection: you can use the **DSL** and **Internet** indicator lights on the front of your gateway, or, if your computer is connected to the network, you can view the user interface.

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Connection Speed

Connection Speed shows the incoming and outgoing data rates of your DSL connection, measured in kilobits per second (Kbps). Incoming is the speed of data flowing from the Internet to your network; Outgoing is the speed of data flowing from your network to the Internet.

Connection Information

Connection Information shows the following basic system configuration information:

- **Internet Address.** The broadband IP address assigned by your service provider to your gateway so that it can communicate on the Internet. This address is assigned to you by your Internet Service Provider for all communication on the Internet, and can either be Static (permanently assigned and manually entered) or Dynamic (automatically assigned and configured), depending on your subscribed service type.
- **Hardware Address.** (Also known as the MAC address, physical address or, if you are a cable customer, the C number.) When your gateway is connected to the broadband network, an association is made between its unique hardware address and its Internet address before it can communicate to the Internet.

  Note: *This field displays the hardware address only if the gateway is connected to the Internet via PPPoE.*
- **Key Code.** The activation code that tells your gateway how to connect to your service provider. The key code is used during the installation process to customize the setup screens and settings for your broadband provider.

Finding Your Hardware Address

If required to find your Hardware (MAC) address, refer to the following table and follow the instructions for your operating system.

Windows OS

1. Click the **Start** menu.
2. Click **Run**.
3. Enter “cmd” in the entry field.
4. Click **OK**.
5. At the C:\> prompt, enter “ipconfig/all”.
6. Locate the Physical address (for example, 01-24-H5-18-B3-00).
7. To close the window, enter “exit” at the C:\> prompt.

Macintosh 8.x & 9.x

1. Click the **Apple** icon.
2. Select **Control Panels**.
3. Select **TCP/IP**.
4. From the Configure pulldown menu, select **Built-in Ethernet**.
5. From the File menu, select **Get Info**. Your MAC address appears as either the Hardware Address or the Ethernet Address.

Macintosh OS X

1. Click the **Apple** icon.
2. Select **System Preferences**.
3. Click the **Network** icon.
4. Click the **TCP/IP** tab.
5. From the Configure pulldown menu, select **Built-in Ethernet**. Your MAC address appears in the lower-left corner as the Ethernet Address.

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Connection Details

The View connection details link accesses the Broadband Link Details page, which displays technical information about your broadband connection. Technical support representatives use this information to help troubleshoot problems with your broadband connection.

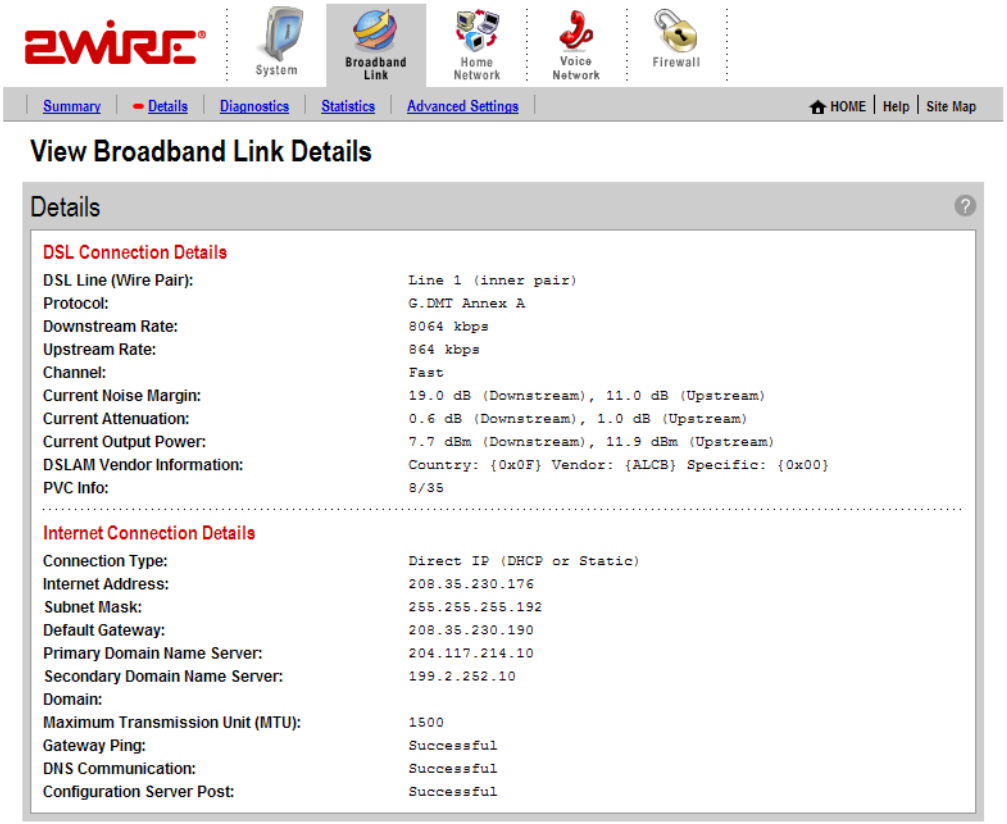

Figure 8. View Broadband Link Details Page

The following table shows the information that may be displayed on the Broadband Link Details page.

Note: The information displayed depends on the type of broadband service you have and your gateway model.

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Item	Description
DSL Connection	
DSL Line (Wire Pair)	The DSL signal can be transmitted on Line 1 (inner pair) or Line 2 (outer pair). During installation, the gateway automatically detects on which line the DSL signal is being transmitted.
Protocol	Displays which DSL protocol is being used to communicate between your system and your service provider.
Downstream Rate	The speed at which data comes over your broadband connection from the Internet to your network, measured in kilobits per second (kbps).
Upstream Rate	The speed at which data goes over your broadband connection from your network to the Internet, measured in kilobits per second (kbps).
Channel	The setting in this field is determined by your ISP's DSLAM equipment.
Current Noise Margin	Indicates how much the noise on the DSL line can increase before it begins to affect the DSL signal. As the noise on the DSL line increases, the margin will approach zero. If the noise exceeds the current noise margin, the DSL signal will be lost. The level is measured in decibels (dBs).
Current Attenuation	Represents the decrease in signal strength between origination of the DSL (Central Office) and your gateway. Customers who live close to their Central Office usually will have less signal loss and a low current attenuation. The level is measured in decibels (dBs).
Current Output Power	The current DSL transmit power of your gateway. The level is measured in decibels (dBs).
DSLAM Vendor Information	A DSLAM is the piece of equipment located in the Central Office (CO) that provides the DSL signal to your DSL line. The Vendor Information identifies information about the configuration of this equipment.
PVC Info	Displays the pair of numbers that uniquely identifies the ATM virtual circuit between the system and the provider of your DSL service.
Internet Connection Details	
Connection Type	Identifies the method by which the gateway connects to the Internet Service Provider (ISP): PPPoE, PPPoA, or Direct.

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Item	Description
Username	The name used to connect with your Internet Service Provider (ISP). Your username was either assigned to you or configured by you during the install process. The correct username is required to successfully connect to the Internet.
Internet Address	A number that is assigned to a computer so that it can communicate on a network and on the Internet. This address is assigned to you by your Internet Service Provider for all communication on the Internet, and can be either Static (permanently assigned and manually entered) or Dynamic (automatically assigned and configured). The typical configuration is for your ISP to automatically assign and configure an Internet address (Dynamic) when your system connects to the Internet. Businesses or power users may use a static address enabling them to run advanced services such as Internet servers and video conferencing. Static addresses typically cost more because they must be leased from the ISP. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (Static IP), this is the information that was provided to you by your ISP and entered by you during gateway installation.
Subnet Mask	Part of the Internet address settings and used in conjunction with your Internet address. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (Static IP), this is the information that was provided to you by your ISP and entered by you during gateway installation.
Default Gateway	Part of the Internet address settings. The default gateway is a device your 2Wire gateway communicates with directly to give you access to the Internet. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (Static IP), this is the information that was provided to you by your ISP and entered by you during the system installation.

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Item	Description
Primary Domain Name Server	Part of the Internet address settings. A domain name is a meaningful, easy-to-remember “handle” for an Internet address. The DNS allows Internet users to specify a name (domain name) to reach a Web page (for example, www.domainname.com) instead of its Internet address (for example, 111.222.111.222). When you enter the name of a Web location (URL), the DNS looks up the name and resolves it to the Web page’s Internet address. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (static IP), this is the information that was provided to you by your ISP and entered by you during gateway installation.
Secondary Domain Name Server	Used as a backup if the Primary server fails to respond. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (Static IP), this is the information that was provided to you by your ISP and entered by you during the system installation. This parameter may not be necessary and may be left blank.
Domain	The name that associates your gateway with your ISP on the broadband link. This parameter may not be necessary and may be left blank. If you receive your Internet address settings automatically, the subnet mask has been set for you. If you manually set your Internet address (Static IP), this is the information that was provided to you by your ISP and entered by you during gateway installation.
Maximum Transmission Unit (MTU)	Shows the maximum size allowed on packets that are sent to and from your network to your ISP.
Gateway Ping	The 2Wire gateway periodically checks the connection between itself and your ISP’s Default Gateway. This field informs you that the check has been performed and whether or not it was successful.
DNS Communication	The gateway periodically checks the connection between itself and your ISP’s domain name server(s) to make sure DNS is available. This field informs you that the check has been performed and whether or not it was successful.
Configuration Server Post	The gateway periodically checks the connection between itself and the 2Wire Component Management System. This field informs you that the check has been performed and whether or not it was successful.

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Monitor Internet Connection

The Monitor Internet connection link launches the Speed Meter. The Speed Meter measures the actual rate at which data is coming into (Incoming Kbps) and going out of (Outgoing Kbps) your system. It measures real-time data throughput in Kilobits per second and displays in one-second intervals.

The Speed Meter monitors the actual data rates while connecting to a Web site. This data rate can differ from the reported speed of your broadband connection due to many factors, including traffic to the Web site or the speed of the Web servers at the site you are visiting.

Note: To use the Speed Meter, your browser must support Java 2.

Test Connection Speed

The Test connection speed link launches the 2Wire Bandwidth Meter. The Bandwidth Meter measures the maximum download speed from 2Wire's Web site to your system in Kilobits per second (Kbps).

The 2Wire Bandwidth Meter estimates your connection speed from the Internet. Because the Internet consists of thousands of interconnections, your connection to a Web site could be affected by many different factors. If you experience slow performance on a particular Web site, you can use the 2Wire Bandwidth Meter to verify whether this is isolated to that particular Web site, or if it is a more general occurrence. Because the 2Wire Bandwidth Meter measures the download speed from 2Wire's Web site to your computer and can be affected by many factors on the Internet, it is not an accurate measurement of the service from your ISP.

Using Broadband Diagnostics

Diagnostics displays an itemized list of your broadband connection's current status. Technical support representatives use this information to help troubleshoot problems with your broadband connection.

To access the Broadband Link Diagnostics page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Broadband Link** tab.

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- Click the Diagnostics link under the tab to open the Broadband Link Diagnostics page.

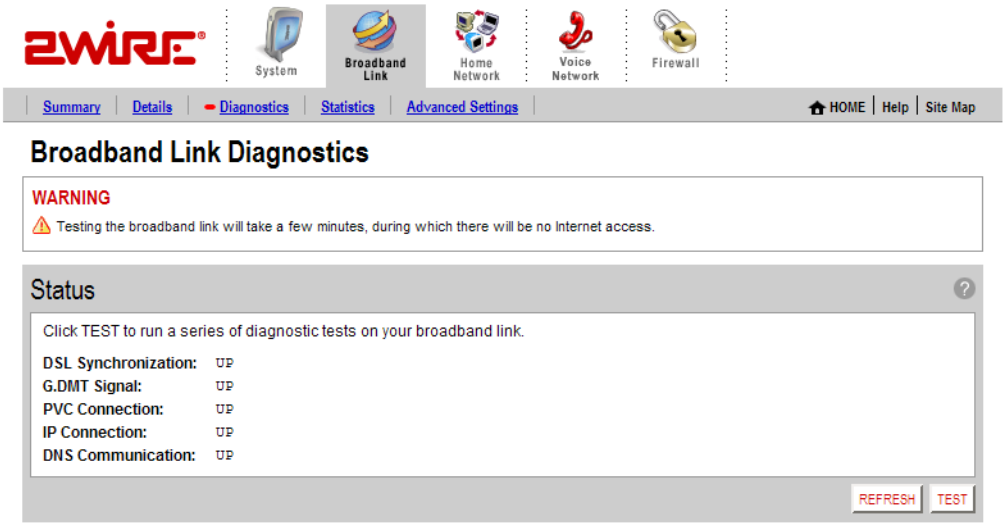

Figure 9. Broadband Link Diagnostics Page

To update the broadband link status, click **REFESH**.

To initiate a full test of your broadband link, click **TEST**. The test will take several minutes, during which the system reestablishes all broadband connections. You will not be able to access the Internet until the test is complete.

Viewing Statistics

The View Broadband Link Statistics page shows statistics associated with the 2Wire gateway broadband link, including cumulative DSL statistics.

To access the Broadband Link Statistics page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Broadband Link** tab.

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- Click the Statistics link under the tab to open the View Broadband Link Statistics page.

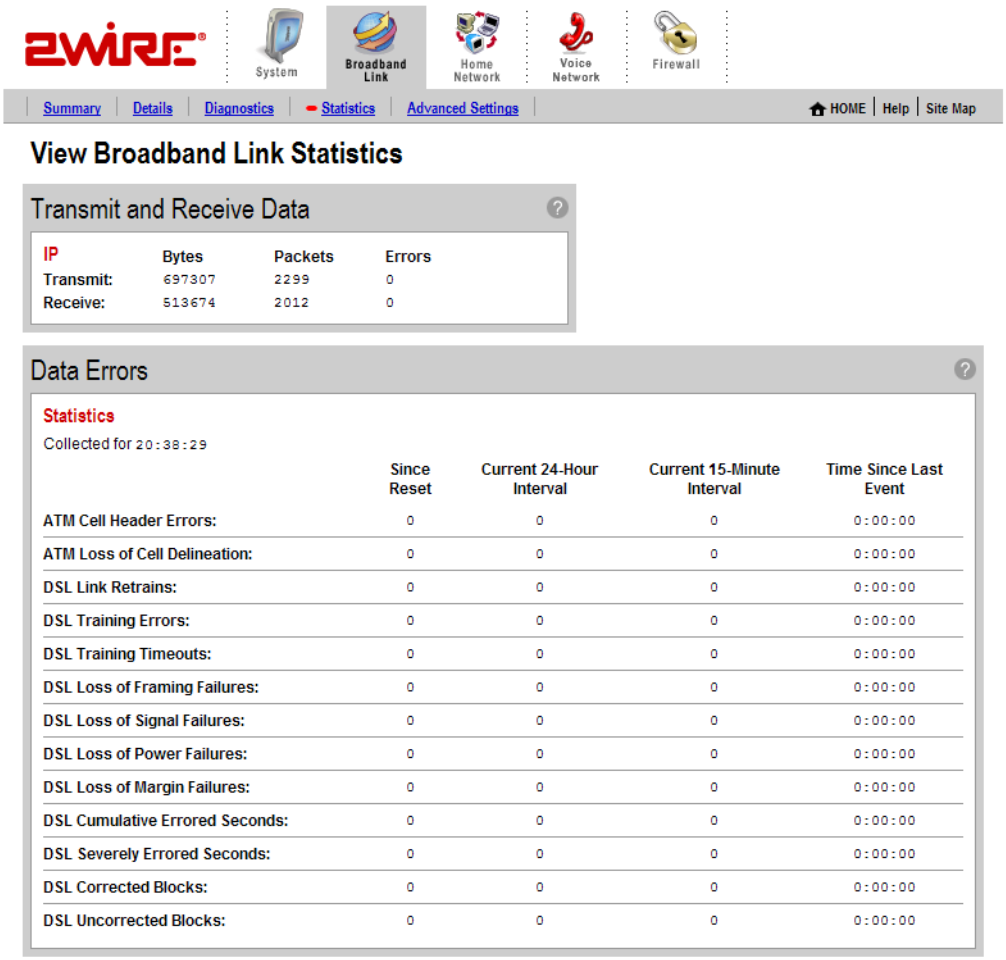

Figure 10. View Broadband Link Statistics Page

The Transmit and Receive Data panel displays the following information.

- **Transmit.** The cumulative number of IP packets transmitted, the cumulative number of IP payload bytes transmitted, and the number and percentage transmitted in error.
- **Receive.** The number of bytes and packets received, and the number and percentage received in error.

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The Data Errors panel displays the following information.

Data Error	Description
ATM Cell Header Errors	The number of ATM cell header CRC errors since the 2Wire gateway was last restarted, and the elapsed time since the last cell header error.
ATM Loss of Cell Delineation	The number of ATM loss of cell delineation errors since the 2Wire gateway was last restarted, and the elapsed time since the last loss of cell delineation error.
DSL Link Retrains	The number of DSL retrains since the 2Wire gateway was last restarted, and the time elapsed since the last retrain.
DSL Training Errors	The number of failed DSL retrains since the 2Wire gateway was last restarted, and the elapsed time since the last failed retrain.
DSL Training Timeouts	The number of timeouts waiting for response from ATU-C since the 2Wire gateway was last restarted, and the elapsed time since the last initialization timeout.
DSL Loss of Framing Failures	The number of DSL loss of framing failures since the 2Wire gateway was last restarted, and the elapsed time since the last line search initialization.
DSL Loss of Signal Failures	The number of DSL loss of signal failures since the 2Wire gateway was last restarted, and the elapsed time since the last loss of signal failure.
DSL Loss of Power Failures	The number of DSL loss of power indications from the ATU-C since the 2Wire gateway was last restarted, and the elapsed time since the last loss of power indication.
DSL Loss of Margin Failures	The number of DSL loss-of-margin failures at current data rate since the 2Wire gateway was last restarted, and the elapsed time since the last loss of margin failure.
DSL Cumulative Errored Seconds	The number of cumulative errored seconds since the 2Wire gateway was last restarted, and the elapsed time since the last error.
DSL Severely Errored Seconds	The number of severely errored seconds since the 2Wire gateway was last restarted, and the elapsed time since the last severely errored second.
DSL Corrected Blocks	The number of corrected DSL superframes that had data errors detected during reception.

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Data Error	Description
DSL Uncorrected Blocks	The number of uncorrected DSL superframes that had data errors detected.
ISP Connection Establishment	The number of times the ISP connection was established since the statistics were last reset, and the elapsed time since the last establishment.

Using Advanced Settings

The Advanced Settings page allows you to manually configure your DSL and Internet connection settings. Typically, these settings are automatically provided by your service provider. You should adjust these settings ***ONLY*** if you are very familiar with DSL and networking technology.

To access the Broadband Link Advanced Settings page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Broadband Link** tab.

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- Click the Advanced Settings link under the tab to open the Broadband Link Advanced Settings page.

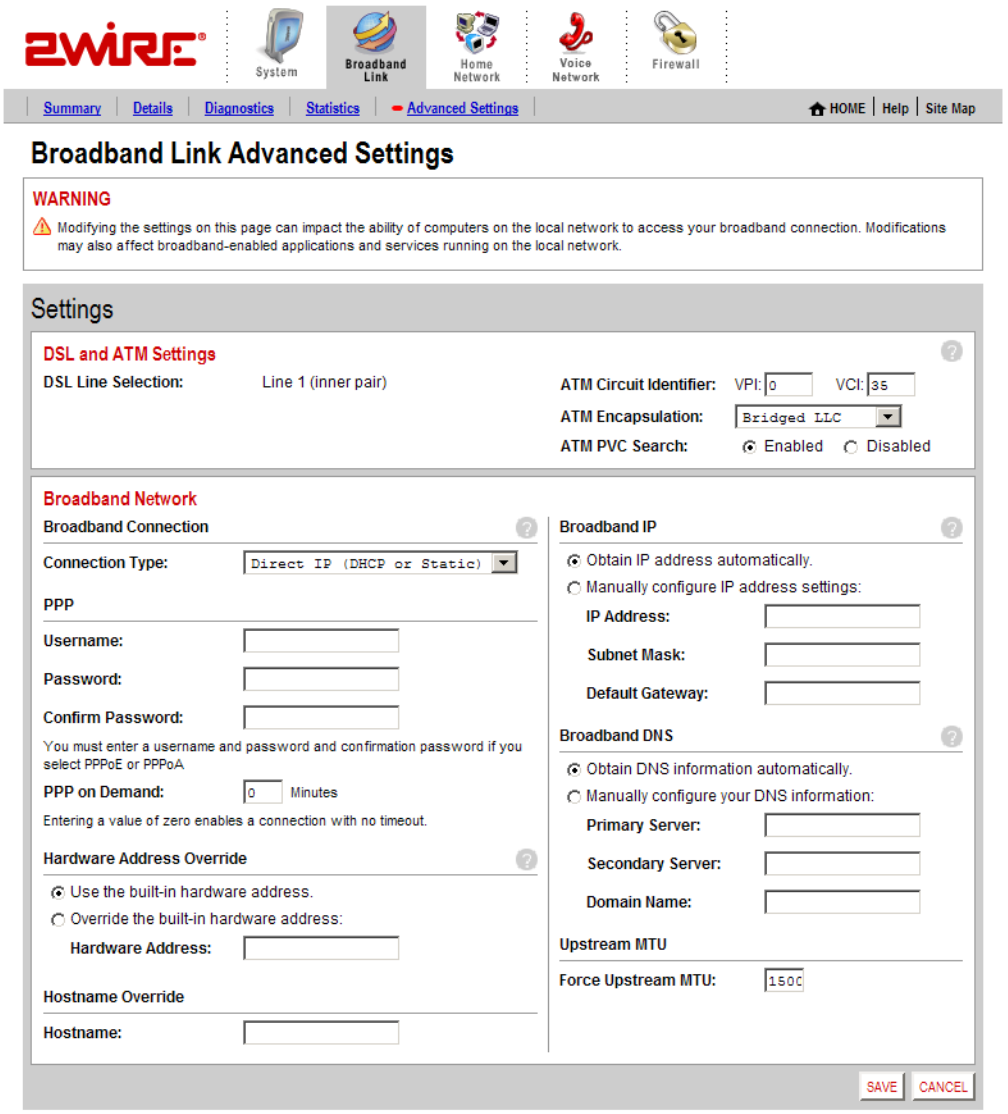

Figure 11. Broadband Link Advanced Settings Page

Modifying DSL and ATM Settings

By default, the gateway automatically detects which DSL line to use. The DSL and ATM panel allows you to select a DSL line and manually configure your ATM settings.

1. From the DSL Line Selection drop-down menu, select Automatic, Line 1 (inner pair), or Line 2 (outer pair).
2. In the ATM Circuit Identifier VPI and VCI fields, enter the VPI and VCI you want the gateway to use to connect to your ISP.

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3. From the ATM Encapsulation drop-down menu, select Bridged LLC, Bridged VC-Mux, Routed LLC, or Routed VC-Mux.
4. In the ATM/PVC Search field, click the **Enabled** or **Disabled** radio button.
5. Click **SAVE**.

Modifying Broadband Connection Settings

The Broadband Connection panel allows you to modify your broadband connection.

1. From the Connection Type drop-down menu, select the connection type: PPPoE, PPPoA, Direct IP (DHCP or Static), or Routed IPoA.

   If you connect via PPPoE or PPPoA, proceed to step 2. If you connect via Direct IP or Routed IPoA, proceed to step 5. Direct IP and Routed IPoA connections do not require a user name or password.
2. In the Username field, enter your user name.
3. In the Password field, enter your password.
4. In the Confirm Password field, re-enter your password.
5. In the PPP on Demand field, enter a value for the length of time you wish the PPP session to remain active.

   If the value is set to 0, the PPP session will not time-out (it will be always-on). If the value is between 1 to 10080 minutes, the PPP session will time-out if the gateway doesn't detect outbound traffic destined for the Internet in the specified time.
6. Click **SAVE**.

Modifying the Hardware Address

By default, the gateway uses its built-in hardware address. The Hardware Address Override panel allows you to manually override the MAC address of the broadband connection, which is sometimes required for cable modems that perform MAC address authentication.

1. Click the **Override the built-in hardware address** radio button.
2. In the Hardware Address field, enter the alternative hardware address.
3. Click **SAVE**.

Enabling Hostname Override

In the DHCP Host Name field, enter the DHCP host name you want the gateway to use. This field is only relevant if your ISP uses DHCP host name authentication.

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Modifying the Broadband IP

By default, the gateway automatically obtains its Internet address. The Broadband IP panel allows you to manually configure your Internet address settings.

1. Click the **Manually configure IP address settings** radio button.
2. In the IP address field, enter the IP address you want the gateway to use.
3. In the Subnet Mask field, enter the subnet mask you want the gateway to use.
4. In the Default Gateway field, enter the default gateway address you want the gateway to use.
5. Click **SAVE**.

Modifying the Broadband DNS

By default, the gateway automatically obtains the DNS server addresses via DHCP. The Broadband DNS panel allows you to manually configure your DNS information.

1. Click the **Manually configure your DNS information** radio button.
2. In the Primary Server field, enter the IP address of the primary DNS server that the gateway is to use for DNS name resolution.
3. In the Secondary Server field, enter the IP address of the secondary DNS server that the gateway is to use for DNS name resolution.
4. In the Domain Name field, enter the specific domain name to be used by the gateway.
5. Click **SAVE**.

Note: If you choose to manually configure your system and have a problem, re-run your installation and follow the installation instructions provided to you by your service provider.

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Home Network Tab

This chapter describes the 2Wire gateway Home Network features, and provides detailed instructions on how to customize your network settings.

Viewing Your Home Network Summary

The Home Network Summary page displays information about the devices installed on your network.

To access the Home Network Summary page:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Home Network** tab to open the View Network Summary page.

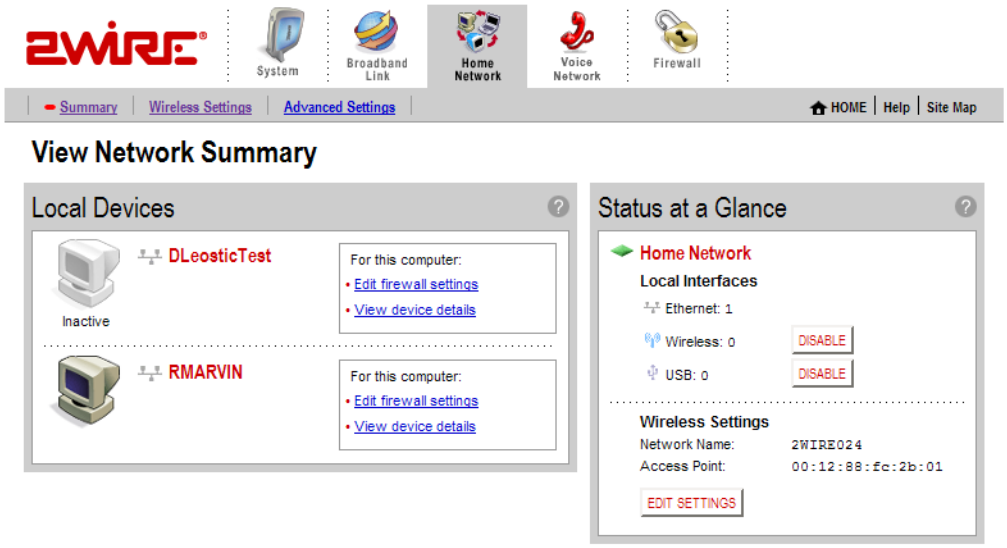

Figure 12. View Network Summary Page

Understanding the Local Devices Panel

The Local Devices panel shows you the name of the device, how it is connected, any special configuration information, and provides links to other system features that you can set up for the device. A “device” on your network is usually a computer — either a personal computer used by a household member, or a computer that is dedicated to a specific use (such as a Web server that hosts online games). The status of each device is shown in the Local Devices list in your 2Wire gateway user interface.

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Each device on your home network is represented with a computer icon.
If the “show inactive devices” option is enabled, and the device becomes inactive because it is powered off or removed from your network, this icon will display as Inactive.

Note: For additional information, refer to “Showing a Device as Inactive” on page 33.

A symbol next to the device shows how it is connected to your home network:

Ethernet USB Wireless

If you defined a name for your computer during System Setup or when your computer was set up, the name displays next to the device. However, there are two instances where the device name will not appear:

- If your computer was manually configured with a static IP address, the static IP address displays instead of the computer’s name.
- If you have not named the device but it still obtains its Internet address from the system, the word “Unknown” displays.

You can change the name of the device so that it will display in the system user interface by clicking the **Change name** link.

If you have configured the firewall to allow information from the Internet to pass through to the computer (also referred to as “hosting an application”), the name of the application(s) that you are hosting are displayed under the device name.

Note: For additional information, refer to “Hosting an Application” on page 41.

If you have defined special features for the computer (such as DMZplus mode), the feature is displayed under the device name.

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Depending on the permissions you have set for devices on your network, the following links may display next to the device:

- Access shared files. Accesses the shared files available from this computer. This feature only works with Microsoft Windows computers that have shared files and file sharing installed.

  Note: *If your computer is configured with a static IP address, this link will not appear.*

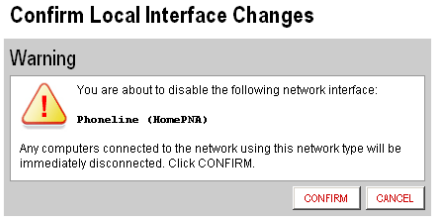
- Edit firewall settings. Accesses the system user interface page, which allows you to edit the firewall pass-through settings for the computer. For example, you may need to change the pass-through settings for the computer if you want to play an Internet game.
- View Internet Access Control. Accesses the Internet Access Restriction schedule for this computer.
- Edit Content Screening. Accesses the Content Screening settings page, allowing you to change the Web site permissions for users on your network.
- View device details. Displays the technical networking details about the device. If you are experiencing difficulties, this information may be helpful to a technical support representative.

Understanding the Status at a Glance Panel

The Status at a Glance panel shows you a list of network connection types, the number of devices connected via each connection type, and your wireless settings.

To change your wireless settings, click the **EDIT SETTINGS** button.

To disable a network device, click the **DISABLE** button.
A message asks you to confirm your decision.


Confirm Local Interface Changes
Warning
You are about to disable the following network interface:
Phoneline (HomePNA)
Any computers connected to the network using this network type will be immediately disconnected. Click CONFIRM.
CONFIRM
CANCEL

Monitoring Your Wireless Settings

Your 2Wire gateway has an integrated wireless access point, which enables you to connect your wireless-enabled computers to your home network.

By default, the 2Wire gateway ships with WEP enabled and a preconfigured network name. The default WEP key is located on the bottom of the gateway, next to the serial number.

To check your current settings and configure changes:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Home Network** tab.

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- Click the Wireless Settings link to open the Configure the Wireless Network page.

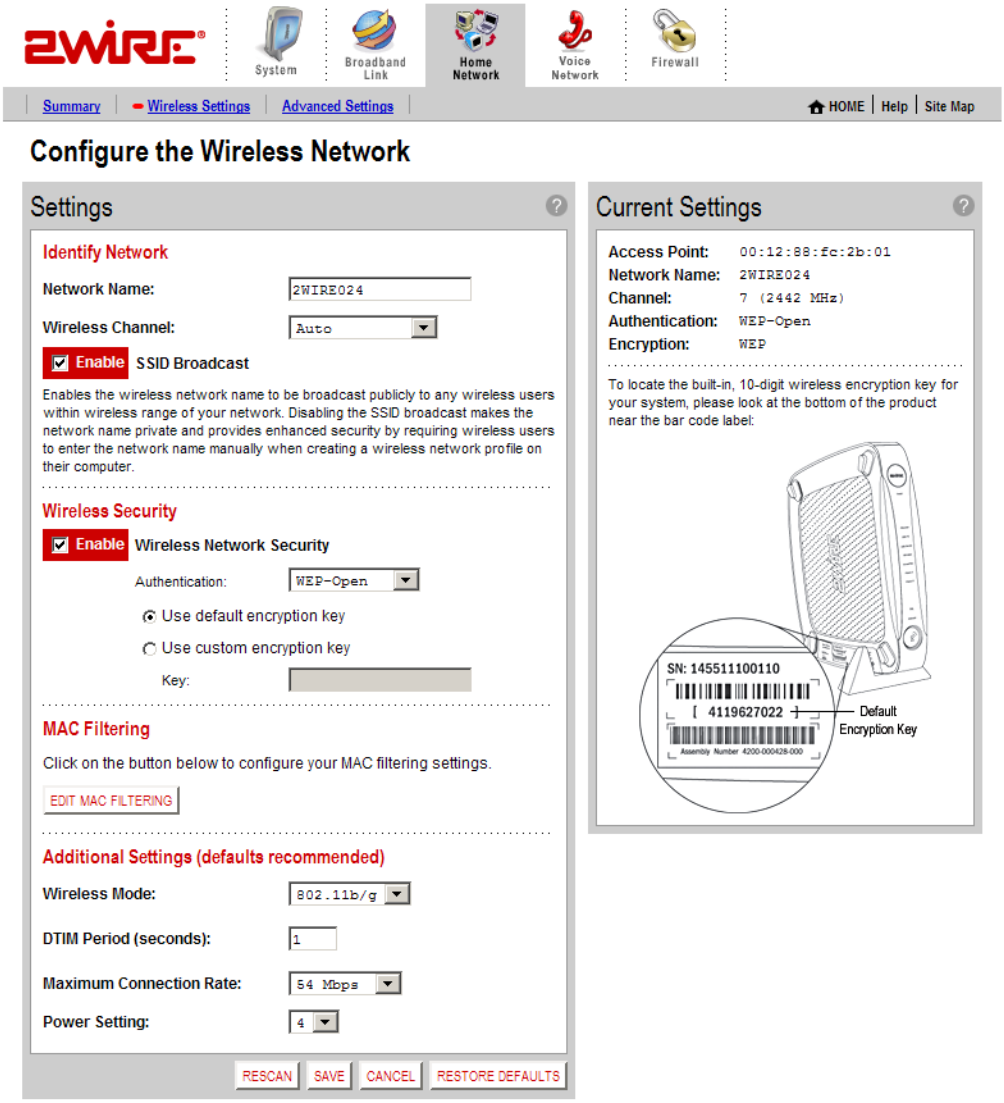

Figure 13. Configure the Wireless Network Page

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The Current Settings panel shows the 2Wire gateway's wireless access point settings:

- **Access Point.** The designated name of the wireless access point.
- **Network Name.** The name assigned to your wireless network. The default is 2WIREXXX, where XXX represents the last three digits of your 2Wire gateway serial number (for example, 2WIRE954).
- **Channel.** The radio frequency band the access point uses for your wireless network (the default is 6). Wireless adapter cards auto-detect which channels to use. If you are having problems with your wireless network, it could be due to radio interference. You can change the wireless channel to see if interference is reduced on a different channel.

  Note: *For more information on wireless channels, refer to the wireless channel entry on page 132 in the Glossary.*
- **Authentication.** The security method used to ensure that users are authorized to access the wireless network: WEP-Open, WEP-Shared, or WPA-PSK.
- **Encryption.** The security setting that makes it difficult for unauthorized users to access your network.

Customizing Security Settings

You should always enable encryption for wireless communication. When encryption is enabled, you must define an encryption key for the 2Wire gateway's wireless access point and configure that same key on each wireless client that will use your 2Wire gateway wireless network.

Note: If encryption is enabled, each wireless client must be configured with the encryption key defined on the system before it can operate on your wireless network.

You can customize the following wireless settings in the Wireless Security panel.

1. From the Authentication pull-down menu, select an authentication setting: WEP-Open, WEP-Shared, or WPA-PSK.

   Note: *WPA-PSK authentication is supported only on HG model gateways.*

   Open authentication allows users to configure their wireless adapter as either Open or Shared; in either case an encryption key is required. Shared authentication allows users to configure their wireless adapter for Shared authentication, which requires an encryption key. WPA-PSK requires that users configure their wireless adapter using TKIP.
2. To use the encryption key that came with your gateway, click the **Use default encryption key** radio button. To create a custom encryption key, click the **Use custom encryption key** radio button.

   If you select **Use custom encryption key**, you can define a 64-bit or 128-bit encryption key. For 64-bit encryption, enter a 10-digit hexadecimal number. For 128-bit encryption, enter a 26-digit hexadecimal number. A hexadecimal number uses the characters 0-9, a-f, or A-F.
3. Click **SAVE**.

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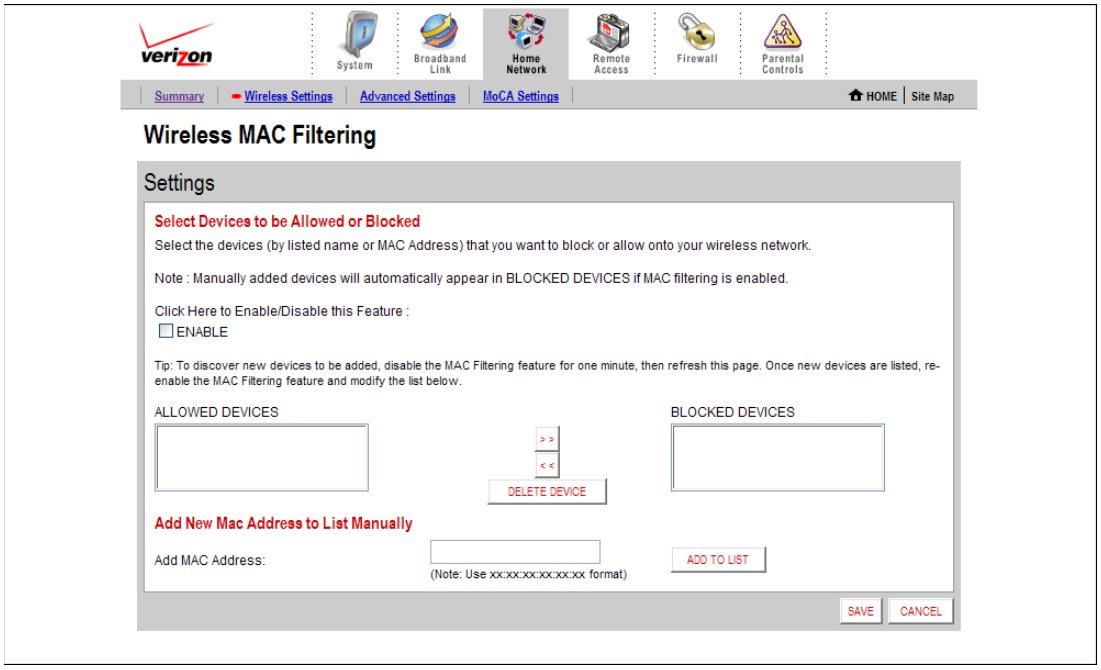
Configuring MAC Filtering

The Media Access Control (MAC) address is a unique number assigned to computer hardware. When setting up your network, you can set your Wireless Broadband Router to give access only to certain MAC addresses. By doing so, you limit access only to your computer hardware and no one else's.

1. In the MAC Filtering pane, click the **EDIT MAC FILTERING** button. The Wireless MAC Filtering page opens.


verizon
System
Broadband Link
Home Network
Remote Access
Firewall
Parental Controls
Summary
Wireless Settings
Advanced Settings
MoCA Settings
HOME
Site Map
Wireless MAC Filtering
Settings
Select Devices to be Allowed or Blocked
Select the devices (by listed name or MAC Address) that you want to block or allow onto your wireless network.
Note : Manually added devices will automatically appear in BLOCKED DEVICES if MAC filtering is enabled.
Click Here to Enable/Disable this Feature :
ENABLE
Tip: To discover new devices to be added, disable the MAC Filtering feature for one minute, then refresh this page. Once new devices are listed, re-enable the MAC Filtering feature and modify the list below.
ALLOWED DEVICES
BLOCKED DEVICES
> >
< <
DELETE DEVICE
Add New Mac Address to List Manually
Add MAC Address:
(Note: Use xx:xx:xx:xx:xx:xx format)
ADD TO LIST
SAVE
CANCEL

2. Click the **Enable** checkbox.
3. The MAC addresses of devices on your network appear in the **ALLOWED DEVICES** field. To block specific devices from accessing your network, highlight the device's MAC address (or name) and use the arrows to move the address to the **BLOCKED DEVICES** field.
4. Click **SAVE**.

Configuring Additional Settings

The Additional Settings panel allows you to customize wireless settings. In general, it is recommended that you leave the default settings in place; however, if you are experiencing connection or performance difficulties, altering these settings may improve performance.

Note: Because the fields that display are dependent on the type of wireless adapter you are using, some of these settings may not display.

- **Wireless Mode.** Allows you to force the gateway to use 802.11b/g, 802.11b-only, or 802.11g-only modes of operation.

  Note: *This field displays only for 802.11b/g based models.*

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- **DTIM Period (seconds).** Determines at which interval the access point will send its broadcast traffic. The default value is 4 seconds.
- **Maximum Connection Rate.** The maximum rate at which your wireless connection works (1, 2, 5.5, 11, or 22 Mbps for 802.11b-based models; 1, 2, 5.5, 11, 6, 9, 12, 24, 36, 48, or 54 Mbps for 802.11b/g-based models).
- **Power Setting.** Allows you to select the power level for your wireless connection. The default list is 1 to 4; additional options may appear based on the service provider's configuration.

If you have customized your wireless system configuration, you can restore the wireless settings to factory defaults by clicking the **RESTORE DEFAULTS** button.

Configuring Advanced Settings

The Edit Advanced Home Network Settings page displays the current IP settings in use by your system for your home network, and allows you to configure your home network settings. You should adjust these settings ***ONLY*** if you are very familiar with computer networking technologies.

The Current Settings panel shows the following information:

- **Router Address.** The IP address used by your system on the private home network (the default is 192.168.0.1). The system has two IP addresses: a private address that it uses on the home network, and one that is used on the public broadband connection on the Internet. You can change the home network IP address by changing the home network IP address range.
- **Subnet Mask.** The subnet mask is determined by the home network IP address range settings (the default is 255.255.0.0).
- **DHCP Range.** The range of IP addresses used by your system (the default is 192.16.1.33 through 192.16.1.250). IP addresses can be either static (permanently assigned) or dynamic (automatic and temporary).

Setting up a Private Network

By default, the 2Wire gateway uses the 192.168.1.0/255.255.0.0 IP address range. You can select from two additional IP address ranges, or configure the network settings manually. You should manually configure these settings ***ONLY*** if you thoroughly understand IP internetworking, because an incorrect configuration can cause unpredictable results.

To set up a private network:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Home Network** tab.

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- Click the Advanced Settings link under the tab to open the Edit Advanced Home Network Settings page.

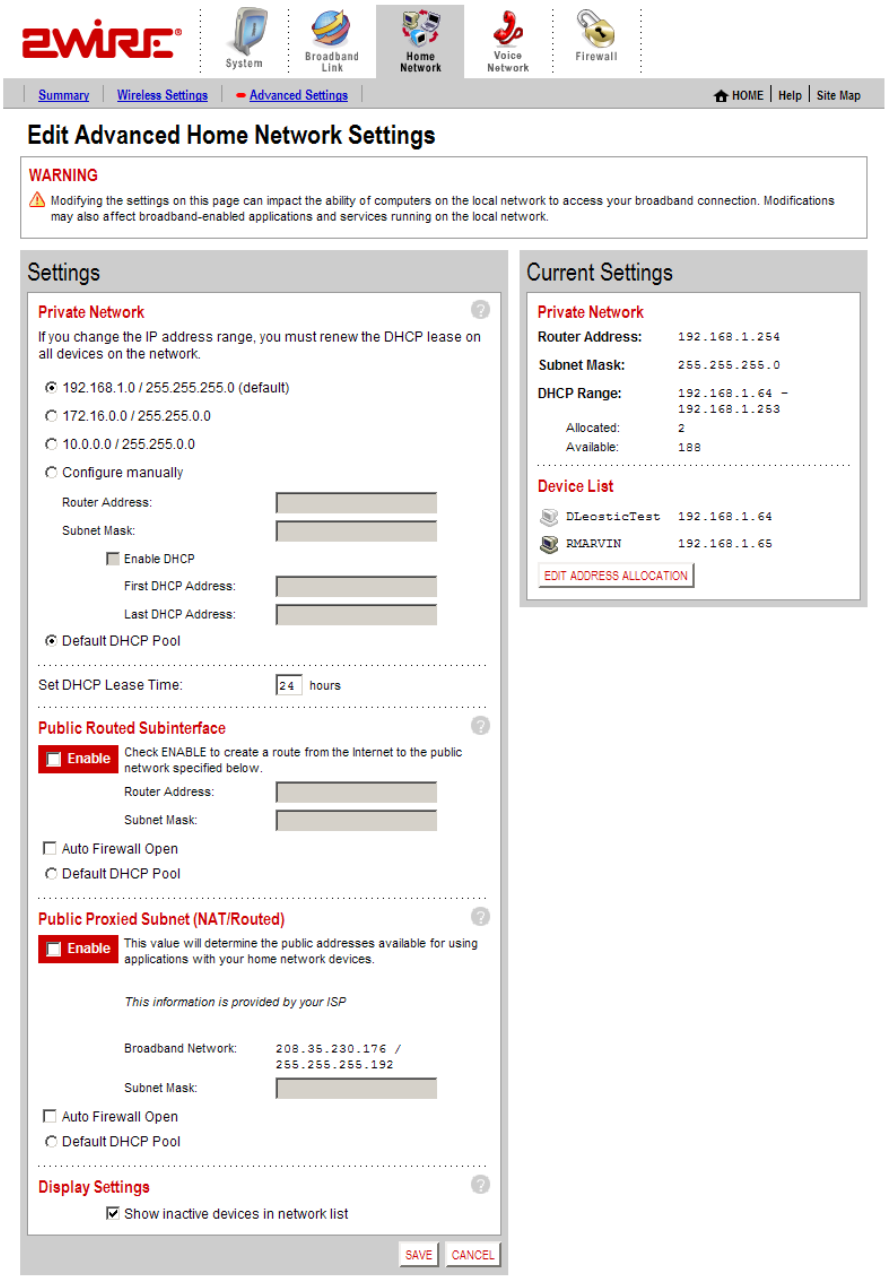

Figure 14. Advanced Home Network Settings Page

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1. Click the radio button that corresponds to the IP address range you wish to use.
   If you select the 172.16.0.0 / 255.255.0.0 or 10.0.0.0 / 255.255.0.0 range, continue to step 5. If you select **Configure manually**, continue to step 2.
2. In the Router Address field, enter the IP address used by your system on the private home network.
3. In the Subnet Mask field, enter the subnet mask. The subnet mask is determined by the home network IP address range settings.
4. Click the Enable DHCP checkbox.
   a. In the First DHCP Address field, enter the first DHCP address that you'll be distributing over the private network.
   b. In the Last DHCP Address field, enter the last DHCP address that you'll be distributing over the private network.
   c. In the Set DHCP Lease Time field, enter a value for the number of hours before the DHCP lease expires.
5. Click **SAVE**.

Note: If you change the home network IP address range, you must renew the DHCP lease on all devices on your home network and manually reconfigure all devices configured with static IP addresses. If you are using the 2Wire Network Support Tool, you can renew the DHCP lease by selecting "Refresh Network Connection" in the Network Support Tool menu.

Setting Up a Public Routed Subinterface

The Public Routed Subinterface pane allows you to create a local network that has broadband network-accessible IP addresses by creating a route from the Internet to the specified public network. The public network operates without Network Address Translation (NAT). This feature is typically used in conjunction with broadband service that provides a range of available IP addresses. Once enabled, the public IP addresses can be assigned to local computers.

To set up a Public Routed Subinterface network:

1. Check the **Enable** checkbox.
2. In the Router Address field, enter the router address (this is typically provided by your service provider).
3. In the Subnet Mask field, enter the subnet mask (this is typically provided by your service provider).
4. (Optional) To open all firewall ports, check the **Auto Firewall Open** checkbox. (By default, your firewall protection is enabled.)
5. Click **SAVE**.

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Setting Up a Public Proxied Subnet

The Public Proxied Subnet pane allows you to create a local network that has broadband-accessible IP addresses. Public Proxied Subnet is a public network in which the local network is an extension of the broadband network and does not require any special routing. Computers that are assigned Public Proxied Subnet IP addresses operate without Network Address Translation (NAT). This feature is typically used in conjunction with broadband service that provides a range of IP addresses. Once enabled, the Public Proxied Subnet IP addresses can be assigned to local computers.

To set up a public proxied subnet:

1. Check the **Enable** checkbox.
2. In the Subnet Mask field, enter the subnet mask (this is typically provided by your service provider, and defines how large your IP pool is).
3. (Optional) To open all firewall ports, check the **Auto Firewall Open** checkbox. (By default, your firewall protection is enabled.)
4. Click **SAVE**.

Selecting a Default DHCP Pool

By default, all devices on the home network that use dynamic (non-static) IP addresses receive these from the Private Network DHCP pool. When either Public Routed Subinterface or Public Proxied Subnet is enabled, click the **Default DHCP Pool** radio button in the corresponding section to have devices receive their IP addresses from those pools.

Showing a Device as Inactive

To show a device as Inactive:

1. Open a Web browser and access the 2Wire gateway user interface.
2. Click the **Home Network** tab.
3. Click the Advanced Settings link under the tab.
4. In the Settings pane, select the **Show inactive devices in network list** checkbox.
5. Click **SAVE**.

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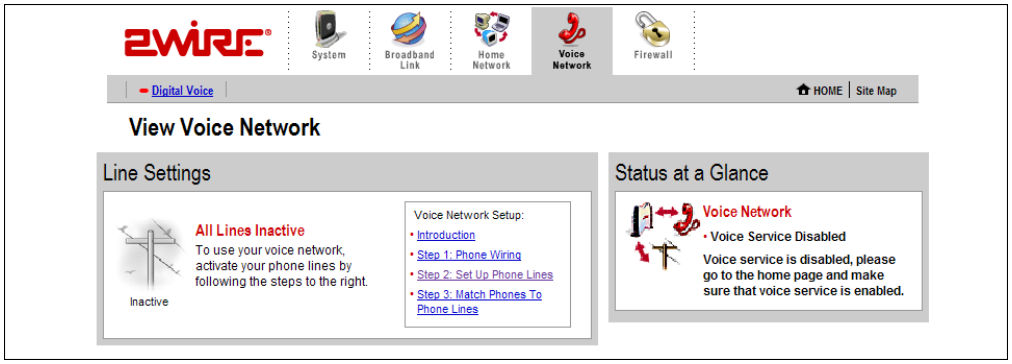
VoIP Network Tab

This chapter describes the 2Wire gateway VoIP Network features, and provides detailed instructions on setting up a VoIP network.

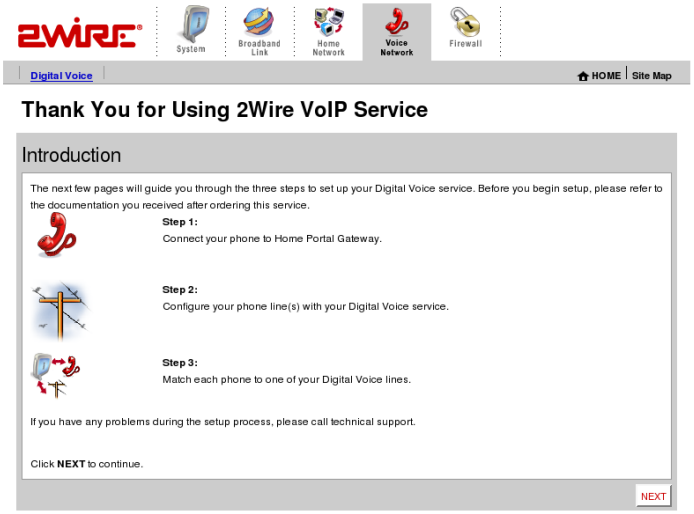
Configuring the VoIP Phones

To configure VoIP via the gateway user interface, follow these steps.

1. Access the gateway user interface by opening a web browser and entering **http://gateway.2wire.net**. Click the **Voice Network** tab. The **View Voice Network** page opens


System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
View Voice Network
Line Settings
All Lines Inactive
To use your voice network, activate your phone lines by following the steps to the right.
Inactive
Voice Network Setup:
Introduction
Step 1: Phone Wiring
Step 2: Set Up Phone Lines
Step 3: Match Phones To Phone Lines
Status at a Glance
Voice Network
Voice Service Disabled
Voice service is disabled, please go to the home page and make sure that voice service is enabled.

2. In the Voice Network Setup box, click **Introduction**. The **Introduction** page displays.


System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
Thank You for Using 2Wire VoIP Service
Introduction
The next few pages will guide you through the three steps to set up your Digital Voice service. Before you begin setup, please refer to the documentation you received after ordering this service.
Step 1:
Connect your phone to Home Portal Gateway.
Step 2:
Configure your phone line(s) with your Digital Voice service.
Step 3:
Match each phone to one of your Digital Voice lines.
If you have any problems during the setup process, please call technical support.
Click NEXT to continue.
NEXT

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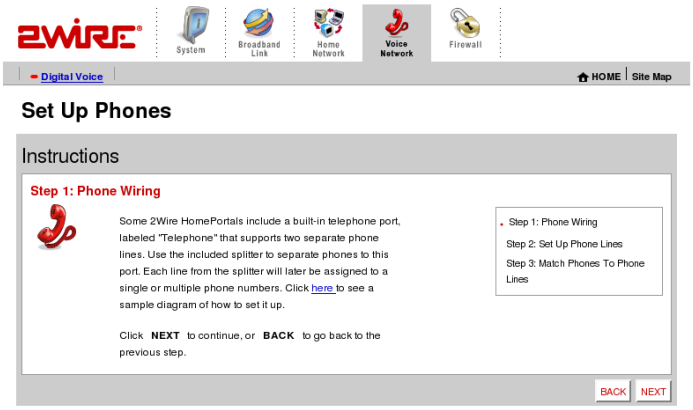
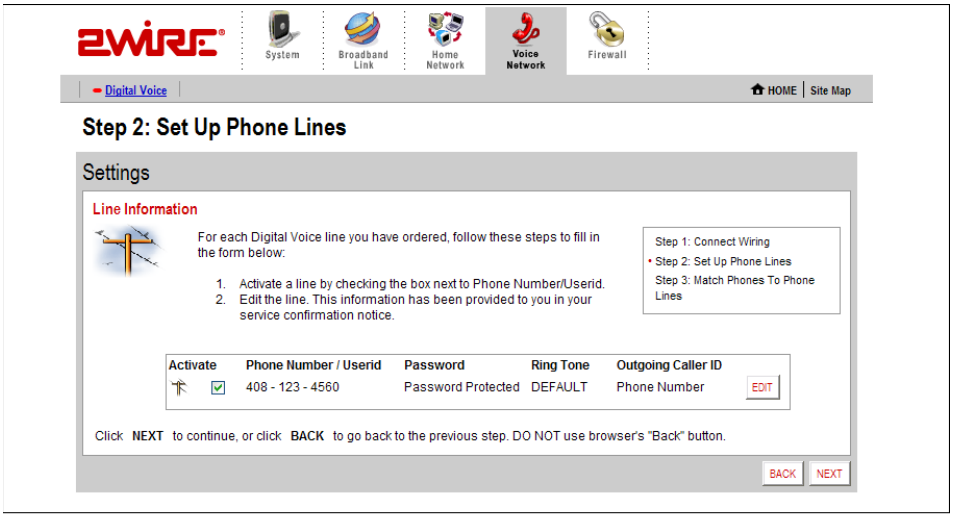
3. Click **NEXT** to continue. The **Set Up Phones** (Step 1: Phone Wiring) page displays. Follow the on-screen instructions.


2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
Set Up Phones
Instructions
Step 1: Phone Wiring
Some 2Wire HomePortals include a built-in telephone port, labeled "Telephone" that supports two separate phone lines. Use the included splitter to separate phones to this port. Each line from the splitter will later be assigned to a single or multiple phone numbers. Click here to see a sample diagram of how to set it up.
Click NEXT to continue, or BACK to go back to the previous step.
Step 1: Phone Wiring
Step 2: Set Up Phone Lines
Step 3: Match Phones To Phone Lines
BACK
NEXT

4. Click **NEXT**. The **Step 2: Set Up Phone Lines** page opens. Activate a line by checking the box next to Phone Number/Userid. Click **EDIT** to change the settings.


2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
Step 2: Set Up Phone Lines
Settings
Line Information
For each Digital Voice line you have ordered, follow these steps to fill in the form below:
1. Activate a line by checking the box next to Phone Number/Userid.
2. Edit the line. This information has been provided to you in your service confirmation notice.
Step 1: Connect Wiring
Step 2: Set Up Phone Lines
Step 3: Match Phones To Phone Lines
Activate
Phone Number / Userid
Password
Ring Tone
Outgoing Caller ID
408 - 123 - 4560
Password Protected
DEFAULT
Phone Number
EDIT
Click NEXT to continue, or click BACK to go back to the previous step. DO NOT use browser's "Back" button.
BACK
NEXT

5. The account is based on username or phone number. To change this setting, enter a Username or phone number in the User Name box. From the Ring Tone pull-down menu, select the tone you wish to associate with the phone (and click **LISTEN** to hear the selected ring tone). To block the outgoing caller ID, click the Anonymous checkbox. To ensure that the settings cannot be changed, enter a username

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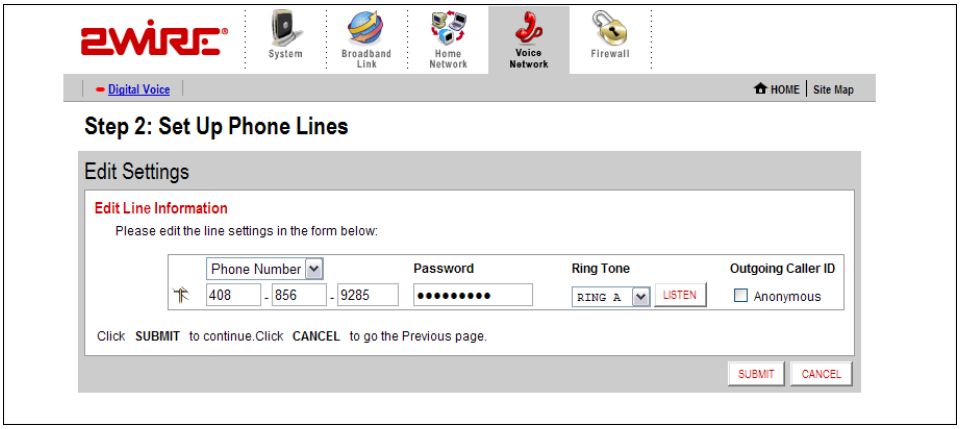
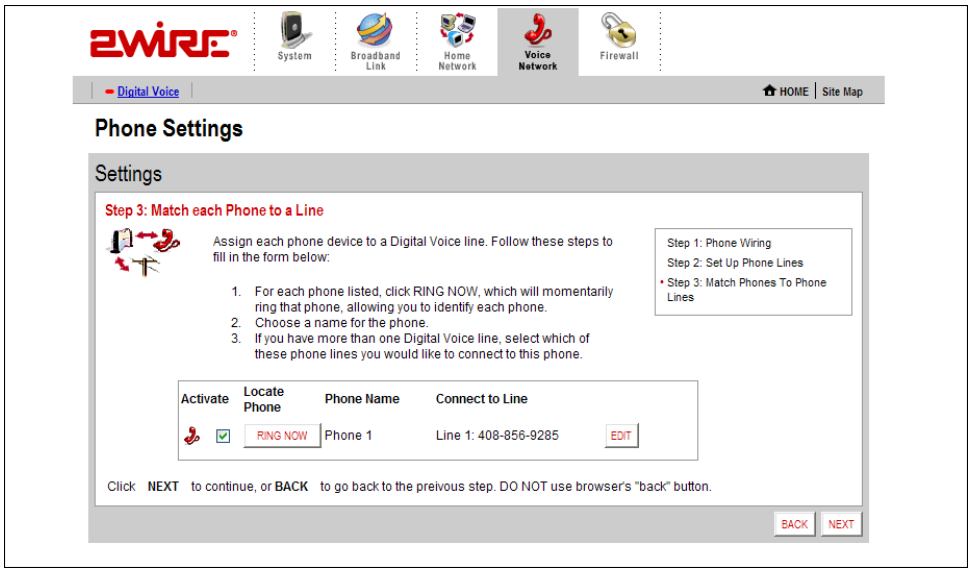
and password in the Auth Username and Auth Password boxes under the Credentials subheading. Click **SUBMIT** to continue. Next, the **Phone Settings** page opens.



6. The Phone Settings page allows you to match each telephone to a phone line.To do so, click **EDIT**.


2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
Phone Settings
Settings
Step 3: Match each Phone to a Line
Assign each phone device to a Digital Voice line. Follow these steps to fill in the form below:
1. For each phone listed, click RING NOW, which will momentarily ring that phone, allowing you to identify each phone.
2. Choose a name for the phone.
3. If you have more than one Digital Voice line, select which of these phone lines you would like to connect to this phone.
Step 1: Phone Wiring
Step 2: Set Up Phone Lines
Step 3: Match Phones To Phone Lines
Activate
Locate Phone
Phone Name
Connect to Line
RING NOW
Phone 1
Line 1: 408-856-9285
EDIT
Click NEXT to continue, or BACK to go back to the preivous step. DO NOT use browser's "back" button.
BACK
NEXT

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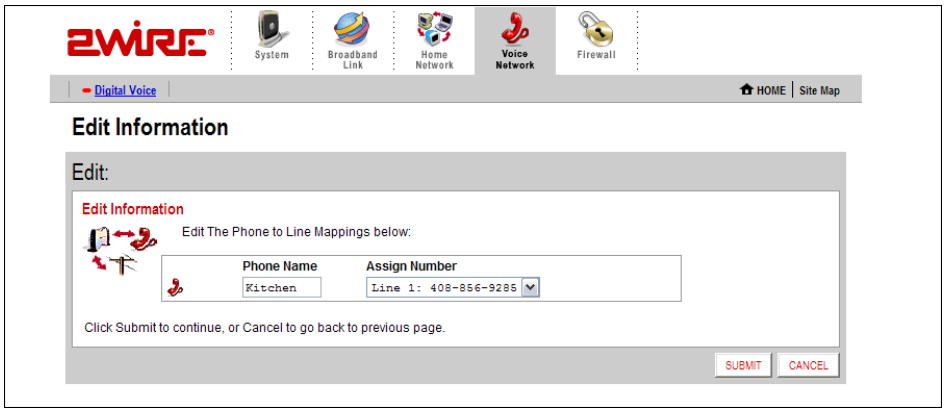
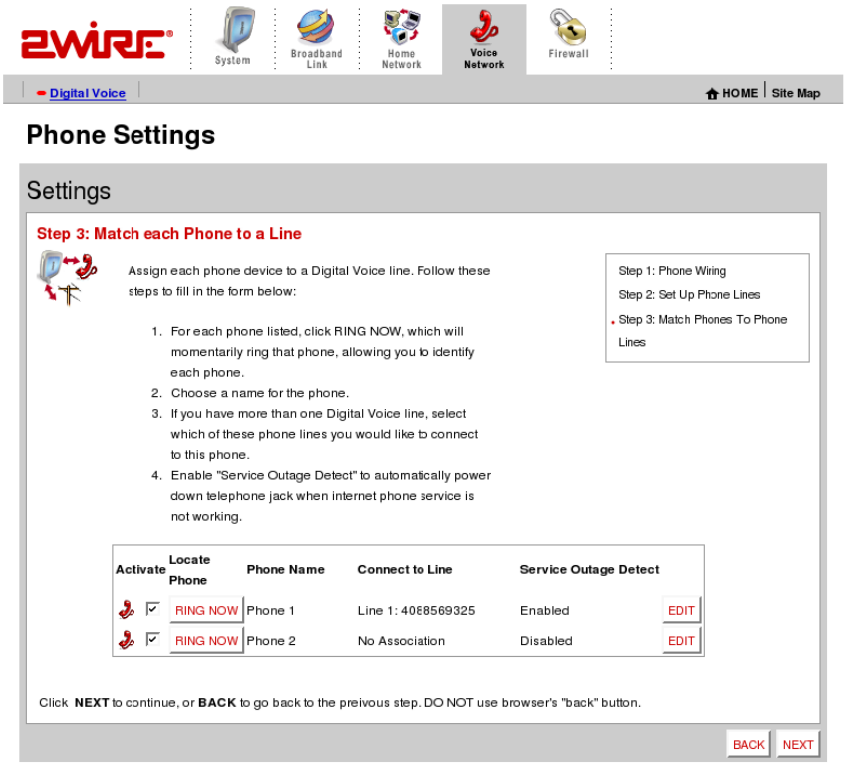
7. In the Phone Name field, select a name to associate with the phone. If you have more than one digital voice line, in the Assign Number field select the phone line you wish to associate with this phone. Click **SUBMIT** to continue. The **Phone Settings** (Step 3: Match each Phone to a Line) page displays.



8. Check the box next to each phone line to activate it. To identify and locate each phone listed, click **RING NOW**, which will momentarily ring that telephone. Click **EDIT** to edit phone name, line connection association, and whether to enable service outage detection. Click **NEXT** to continue.


2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Digital Voice
HOME | Site Map
Phone Settings
Settings
Step 3: Match each Phone to a Line
Assign each phone device to a Digital Voice line. Follow these steps to fill in the form below:
1. For each phone listed, click RING NOW, which will momentarily ring that phone, allowing you to identify each phone.
2. Choose a name for the phone.
3. If you have more than one Digital Voice line, select which of these phone lines you would like to connect to this phone.
4. Enable "Service Outage Detect" to automatically power down telephone jack when internet phone service is not working.
Step 1: Phone Wiring
Step 2: Set Up Phone Lines
Step 3: Match Phones To Phone Lines
Activate
Locate Phone
Phone Name
Connect to Line
Service Outage Detect
RING NOW
Phone 1
Line 1: 4088569325
Enabled
EDIT
RING NOW
Phone 2
No Association
Disabled
EDIT
Click NEXT to continue, or BACK to go back to the preivous step. DO NOT use browser's "back" button.
BACK
NEXT

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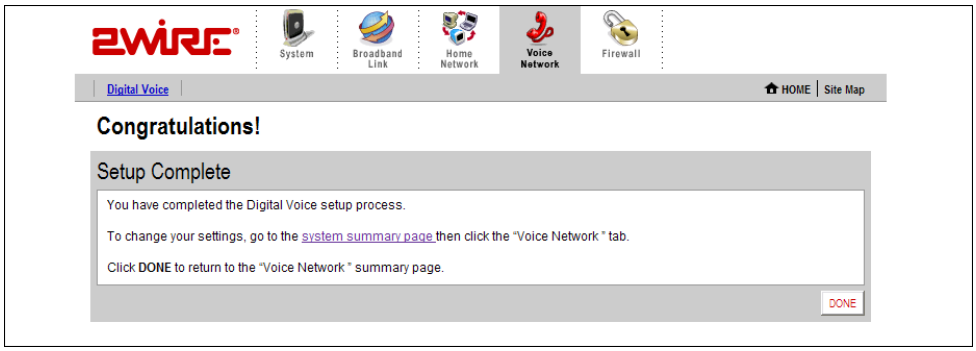
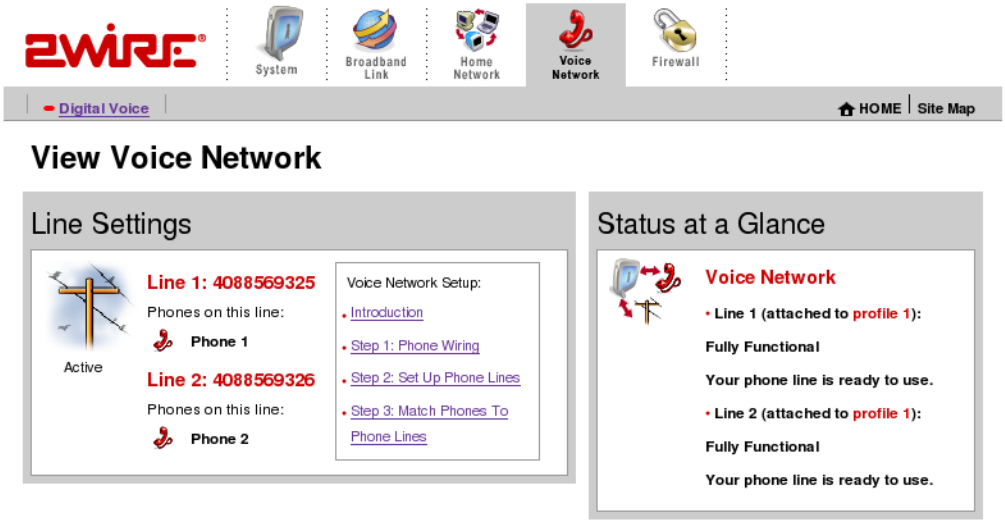
9. Congratulations, setup is complete. Click **DONE** to return to the Voice Network summary page. If you want to change your settings, go to the System Summary page, then click the Voice Network tab.



Note: To make any broadband connection settings changes, such as configuring the voice servers, refer to the Management and Diagnostic Console. See "Management and Diagnostic Console" on page 58.

Once the VoIP server configuration settings have been implemented, open a browser and enter **http://gateway.2wire.net**. Click the **Voice Network** tab. The **View Voice Network** page displays. You can view the status of your VoIP line(s) in the Status at a Glance section.



Note: To comply with Australian standards, local ports shall not be connected via shared building cabling.

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Firewall Tab

This chapter describes the 2Wire gateway firewall features, and provides detailed instructions on how to modify the firewall settings.

Firewall Features

The 2Wire gateway has a professional-grade firewall to help prevent unauthorized users from accessing your local network. The 2Wire gateway firewall includes the following features:

Stateful packet inspection. Blocks common Denial of Service attacks (such as SYN/FIN flooding or Smurf), and detects and logs TCP and UDP port scans.

Stateless packet inspection. Filters specific NetBios traffic, suspicious packets and IP fragments; blocks packets sent from the private network to the Internet that have spoofed IP addresses.

Network Address Translation (NAT). Translates a local network's IP address to an external address maintained by the 2Wire gateway, effectively "hiding" the existence of a home network to the Internet. The 2Wire gateway then uses this external address to communicate with the Internet on behalf of devices connected to the local network.

Port Address Translation (PAT). A function provided by some routers which allows hosts on a LAN to communicate with the rest of a network (such as the Internet) without revealing their own private IP address. All outbound packets have their IP address translated to the router's external IP address. Replies come back to the router, which then translates them back into the private IP address of the original host for final delivery. During PAT, each computer on the LAN is translated to the same IP address, but with a different port number assignment.

Inbound and outbound port blocking. Blocks common inbound and outbound protocol types from passing information to or receiving information from the Internet.

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Viewing Your Firewall Summary

The Firewall Summary page provides summary information and links to the most commonly used security-related features of your system.

To access the Firewall Summary page:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab to open the View Firewall Summary page.

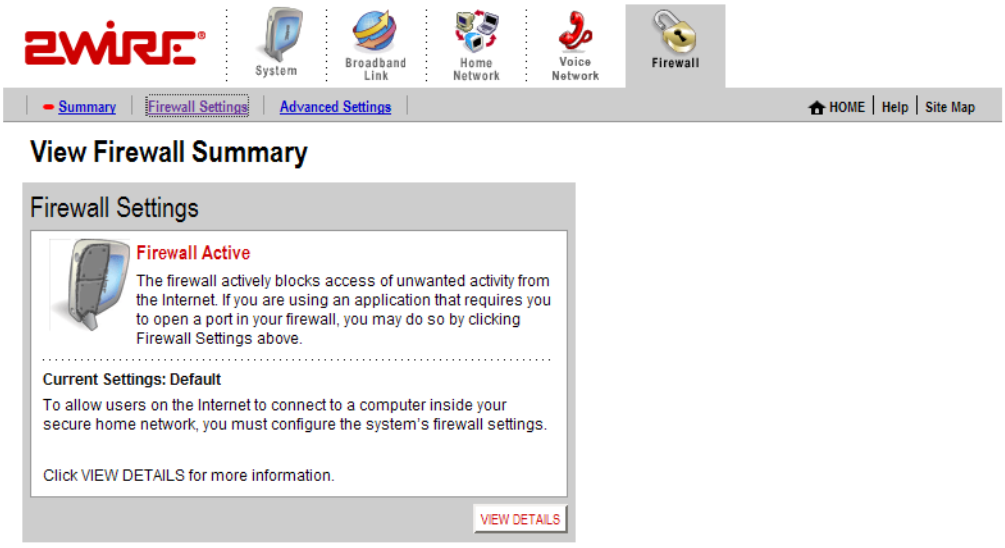
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Advanced Settings
HOME
Help
Site Map
View Firewall Summary
Firewall Settings
Firewall Active
The firewall actively blocks access of unwanted activity from the Internet. If you are using an application that requires you to open a port in your firewall, you may do so by clicking Firewall Settings above.
Current Settings: Default
To allow users on the Internet to connect to a computer inside your secure home network, you must configure the system's firewall settings.
Click VIEW DETAILS for more information.
VIEW DETAILS

Figure 15. View Firewall Summary Page

The Firewall Settings panel displays the Current Settings for your firewall.

- **Default.** Unsolicited inbound traffic is not allowed to pass through the firewall.
- **Custom.** Applications are associated with computers on your network.

An access list shows the computers (Devices) on your network and the names of the Allowed Applications for each computer. When you allow application traffic, external users on the Internet can have limited access to your home network. This access might be required to allow some programs (such as game servers or instant messaging software) to operate properly.

For example, a remote game player on the Internet might need to contact the game server program that you have installed on your home network in order to play against you. Normally, the firewall blocks this communication. By changing the firewall settings, this communication is permitted to pass through a "pinhole" in the firewall. This function may be referred to as "port-mapping" or "port-forwarding" in your software program documentation.

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Click **VIEW DETAILS** to access the Firewall Details page, which shows a list of all the devices that have applications configured in the firewall and the details of these configurations.

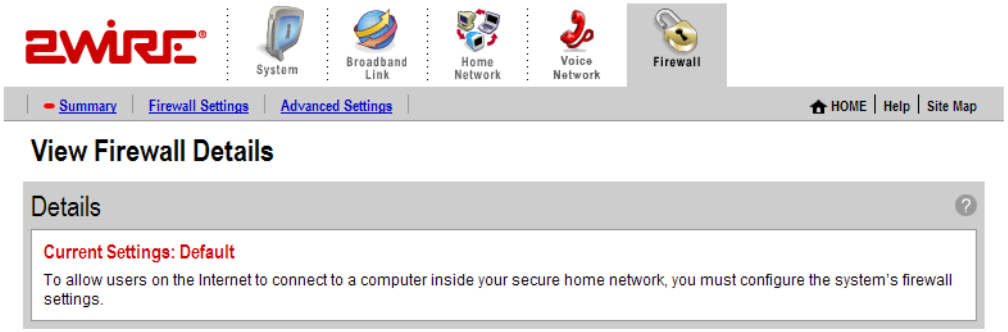

Figure 16. View Firewall Details Page

If you have the Firewall Monitor enhanced service, the Firewall Monitor panel shows a brief summary of the number of attacks that were blocked for the current day and week. Click **VIEW DETAILS** to access the Monitor the Firewall page.

Hosting an Application

When you host an application on your network for Internet users to access, you must configure the 2Wire gateway firewall to pass through specific application data to a selected computer.

To host an application:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.

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- Click the Firewall Settings link under the tab to open the Edit Firewall Settings page.

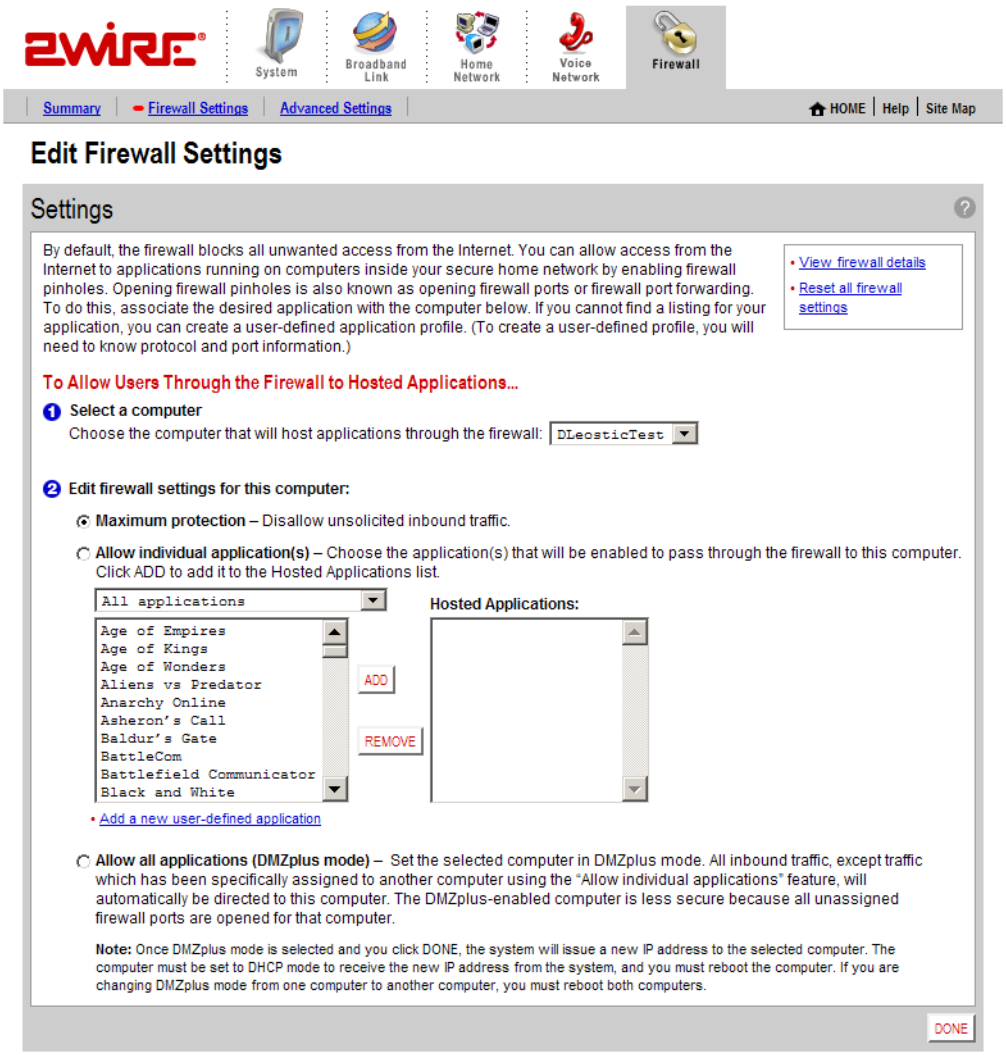
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Advanced Settings
HOME
Help
Site Map
Edit Firewall Settings
Settings
By default, the firewall blocks all unwanted access from the Internet. You can allow access from the Internet to applications running on computers inside your secure home network by enabling firewall pinholes. Opening firewall pinholes is also known as opening firewall ports or firewall port forwarding. To do this, associate the desired application with the computer below. If you cannot find a listing for your application, you can create a user-defined application profile. (To create a user-defined profile, you will need to know protocol and port information.)
View firewall details
Reset all firewall settings
To Allow Users Through the Firewall to Hosted Applications...
1 Select a computer
Choose the computer that will host applications through the firewall: DLeosticTest
2 Edit firewall settings for this computer:
Maximum protection – Disallow unsolicited inbound traffic.
Allow individual application(s) – Choose the application(s) that will be enabled to pass through the firewall to this computer. Click ADD to add it to the Hosted Applications list.
All applications
Age of Empires
Age of Kings
Age of Wonders
Aliens vs Predator
Anarchy Online
Asheron's Call
Baldur's Gate
BattleCom
Battlefield Communicator
Black and White
ADD
REMOVE
Hosted Applications:
Add a new user-defined application
Allow all applications (DMZplus mode) – Set the selected computer in DMZplus mode. All inbound traffic, except traffic which has been specifically assigned to another computer using the "Allow individual applications" feature, will automatically be directed to this computer. The DMZplus-enabled computer is less secure because all unassigned firewall ports are opened for that computer.
Note: Once DMZplus mode is selected and you click DONE, the system will issue a new IP address to the selected computer. The computer must be set to DHCP mode to receive the new IP address from the system, and you must reboot the computer. If you are changing DMZplus mode from one computer to another computer, you must reboot both computers.
DONE

Figure 17. Edit Firewall Settings Page

1. From the **Select a computer** pull-down menu, select the computer that you wish to host the application.
2. Click the **Allow individual application(s)** radio button.
3. In the Applications panel, select an application.
4. Click the **ADD >** button. The application you selected now appears in the Hosted Applications pane.
5. Click **DONE**.

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To stop hosting an application:

1. In the Hosted Applications panel, select the application you wish to stop hosting.
2. Click the **< REMOVE** button.
3. Click **DONE**.

Updating the Application Profile List

If the application you want to host does not appear in the Application Profile list, you may need to update the application list. If an update is available, the **UPDATE APPLICATION LIST** button appears above the list of application profiles. If the application that you want to host is not included in the updated application list, you may need to add your own application profile.

Adding an Application Profile

If you wish to host an application that is not included in the Application Profile list, you can add an application using the Add Application Profile page.

An application profile configures your system's firewall to pass through application-specific data. This feature is typically used if the application for which you would like to pass through data to a given computer is new or has been recently updated to a new version.

To create a new application profile:

- Open a Web browser and access the gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Firewall Settings link under the tab to open the Edit Firewall Settings page.

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- In the Applications panel, click the **Add a new user-defined application** link to open the Edit Application page.

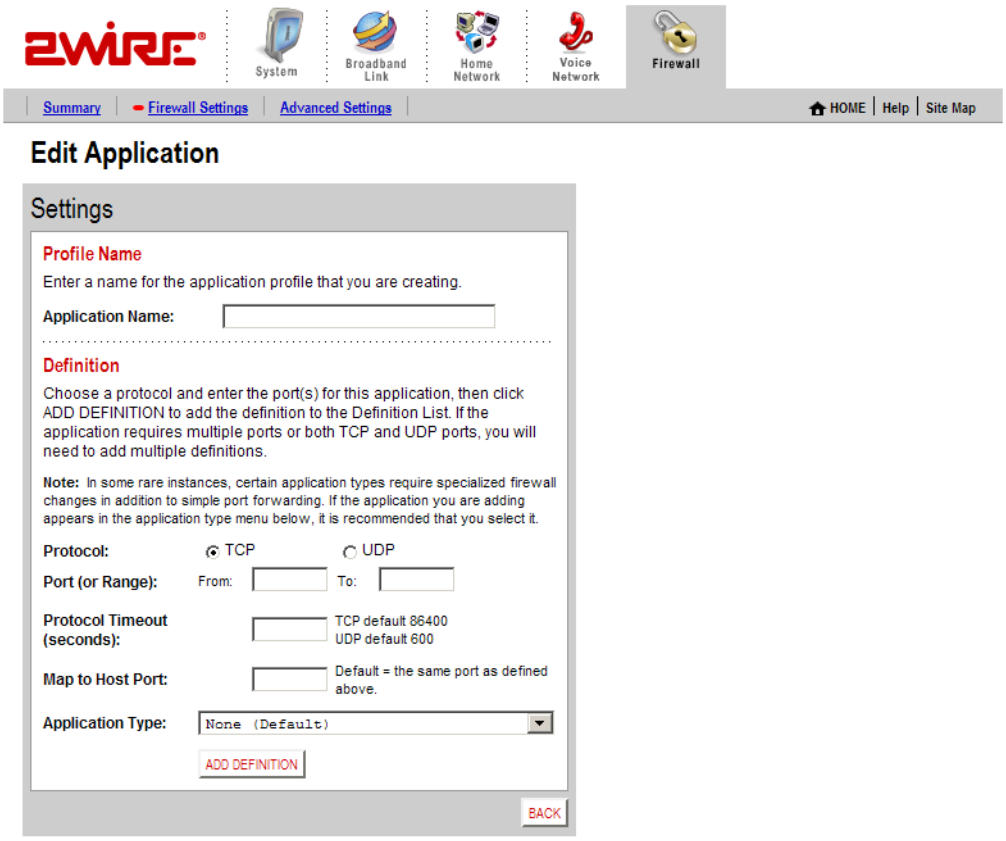
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Advanced Settings
HOME
Help
Site Map
Edit Application
Settings
Profile Name
Enter a name for the application profile that you are creating.
Application Name:
Definition
Choose a protocol and enter the port(s) for this application, then click ADD DEFINITION to add the definition to the Definition List. If the application requires multiple ports or both TCP and UDP ports, you will need to add multiple definitions.
Note: In some rare instances, certain application types require specialized firewall changes in addition to simple port forwarding. If the application you are adding appears in the application type menu below, it is recommended that you select it.
Protocol:
TCP
UDP
Port (or Range):
From:
To:
Protocol Timeout (seconds):
TCP default 86400
UDP default 600
Map to Host Port:
Default = the same port as defined above.
Application Type:
None (Default)
ADD DEFINITION
BACK

Figure 18. Edit Application Page

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1. In the **Application Name** field, enter a name for the application profile. You can enter any name you like, although it's recommended that you use the name of the application (for example, Redwing Game Server).

2. In the Definition panel, create a definition for your application.

   A definition consists of a series of protocol-specific ports that are to be allowed through the firewall. This information should be contained in the documentation provided by the company that produces the application.

   a. In the **Protocol** field, select the **TCP** or **UDP** radio button. If the application you are adding requires both, you must create a separate definition for each.

   b. In the **Port (or Range)** field, enter the port or port range the application uses.
   For example, some applications may require only one port to be opened (such as TCP port 500); others may require that all TCP ports from 600 to 1000 be opened.

   c. In the **Protocol Timeout (seconds)** field, you may optionally enter a value for the amount of time that can pass before the application "times out." You can also leave the field blank, in which case the system uses the default values (86,400 seconds for the TCP protocol; 600 seconds for the UDP protocol).

   d. In the **Map to Host Port** field, enter a value that will map the port range you established in step b to the local computer. For example, if you set the value to 4000 and the range being opened is 100 to 108, the forwarded data to the first value in the range will be sent to 4000. Subsequent ports will be mapped accordingly; 101 will be sent to 4001, 102 will be sent to 4002, etc.

   e. From the **Application Type** drop-down menu, select the application type. If you do not know the application type, select None (Default).

3. Click **ADD DEFINTION** to add the values to the profile definition list.

4. Click **DONE**.

Repeat these steps for each port or range of ports required for the application profile.

To edit or delete an application profile:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Firewall Settings link under the tab to open the Edit Firewall Settings page.

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- In the Applications panel, click the **Edit or delete user-defined application** link. The Select a Hosted Application page opens.

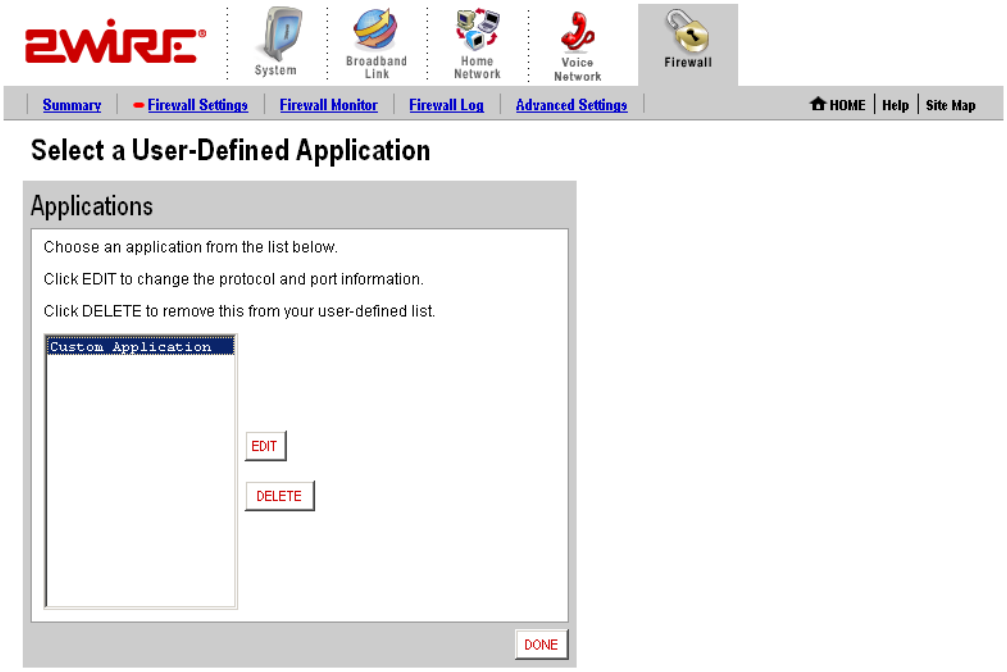

Figure 19. Select a Hosted Application Page

1. In the User-Defined Application Profiles panel, highlight the application you wish to edit or delete.

   f. To edit the application profile, click **EDIT**. The Edit Application screen appears. Make the necessary changes to the application profile and click **DONE**.

   g. To delete the application profile, click **DELETE**.

Allowing all Applications (DMZplus)

DMZplus is a special firewall mode that is used for hosting applications if you cannot get an application to work properly using the “Allow individual application(s)” option. When in DMZplus mode, the designated computer:

- Shares your gateway’s IP address (Router Address).
- Appears as if it is directly connected to the Internet.
- Has all of the unassigned TCP and UDP ports opened and pointed to it.
- Can receive unsolicited network traffic from the Internet.

Although the computer in DMZplus mode appears to Internet users as though it is directly connected to the Internet, it is still protected by your system firewall. All traffic is inspected by the firewall’s Stateful Packet Inspection engine and all known hacker attacks continue to be blocked.

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Because all filtered traffic is forwarded to the designated computer, you should use DMZplus mode with caution. A computer in DMZplus mode is less secure because all available ports are open and all incoming Internet traffic is directed to this computer.

To configure DMZplus:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Firewall Settings link under the tab to open the Edit Firewall Settings page.

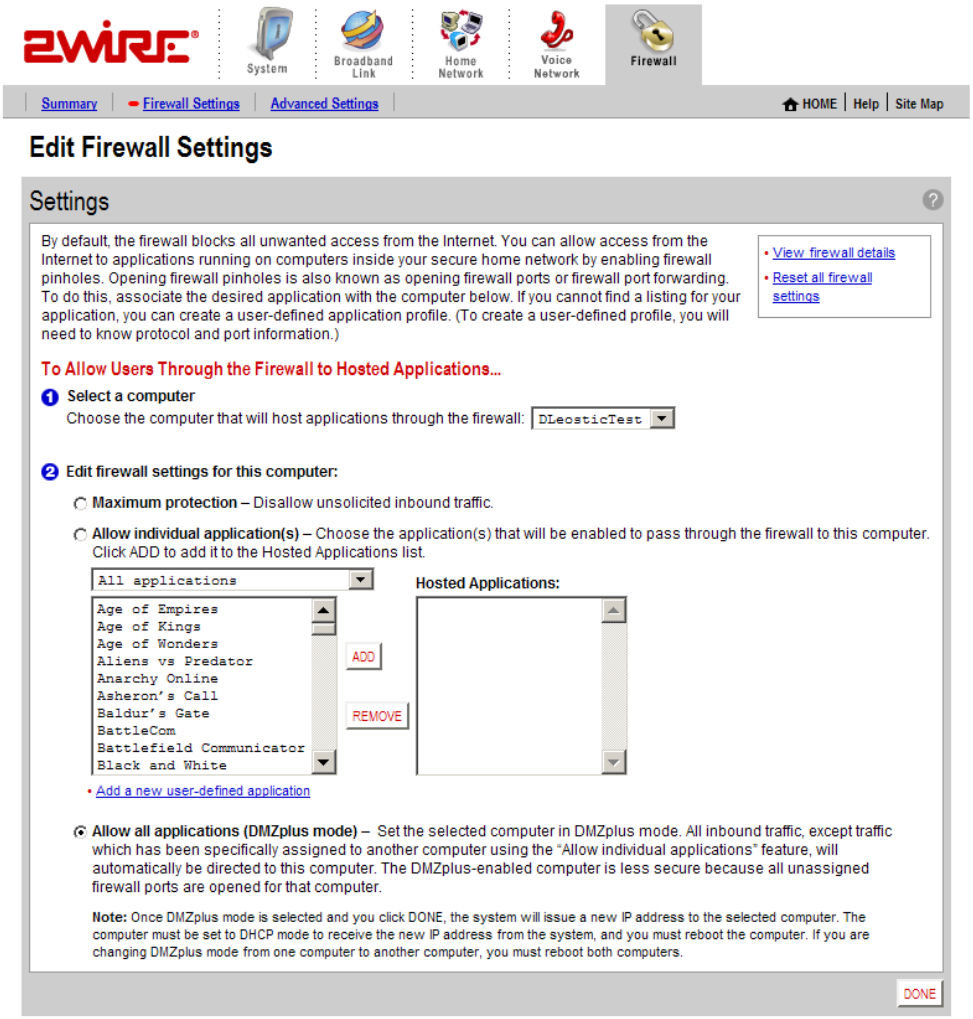
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Advanced Settings
HOME
Help
Site Map
Edit Firewall Settings
Settings
By default, the firewall blocks all unwanted access from the Internet. You can allow access from the Internet to applications running on computers inside your secure home network by enabling firewall pinholes. Opening firewall pinholes is also known as opening firewall ports or firewall port forwarding. To do this, associate the desired application with the computer below. If you cannot find a listing for your application, you can create a user-defined application profile. (To create a user-defined profile, you will need to know protocol and port information.)
View firewall details
Reset all firewall settings
To Allow Users Through the Firewall to Hosted Applications...
1 Select a computer
Choose the computer that will host applications through the firewall:
DLeosticTest
2 Edit firewall settings for this computer:
Maximum protection – Disallow unsolicited inbound traffic.
Allow individual application(s) – Choose the application(s) that will be enabled to pass through the firewall to this computer. Click ADD to add it to the Hosted Applications list.
All applications
Age of Empires
Age of Kings
Age of Wonders
Aliens vs Predator
Anarchy Online
Asheron's Call
Baldur's Gate
BattleCom
Battlefield Communicator
Black and White
ADD
REMOVE
Hosted Applications:
Add a new user-defined application
Allow all applications (DMZplus mode) – Set the selected computer in DMZplus mode. All inbound traffic, except traffic which has been specifically assigned to another computer using the "Allow individual applications" feature, will automatically be directed to this computer. The DMZplus-enabled computer is less secure because all unassigned firewall ports are opened for that computer.
Note: Once DMZplus mode is selected and you click DONE, the system will issue a new IP address to the selected computer. The computer must be set to DHCP mode to receive the new IP address from the system, and you must reboot the computer. If you are changing DMZplus mode from one computer to another computer, you must reboot both computers.
DONE

Figure 20. Edit Firewall Settings Page

1. From the **Select a computer** pull-down menu, select the computer to which you would like to have all data sent.
2. Click **Allow all applications (DMZplus mode)**.

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3. Click **DONE**.
4. Access the computer that you selected in step 1.
5. Confirm that the computer is configured for DHCP. If it is not, configure it for DHCP.
6. Restart the computer. When the computer restarts, it receives a special IP address from the system and all unassigned TCP and UDP ports are forwarded to it.

To stop DMZplus:

1. From the **Select a computer** pull-down menu, select the computer for which you would like to disable DMZplus.
2. In the Edit firewall settings for this computer pane, click **Maximum protection**.
3. Click **DONE**.
4. Access the computer that you selected in step 1. If the computer will continue to automatically obtain an IP address, proceed to step 5. If the computer will have a static IP address, configure it with a valid static IP address.
5. Restart the computer.

Viewing the Firewall Log

The 2Wire gateway keeps a log of all firewall-related events that occur. Each log entry contains the date and time the event occurred, the severity level of the event, and details about the event.

To view the log:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.

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- Click the Firewall Log link under the tab to open the View Firewall Log page.

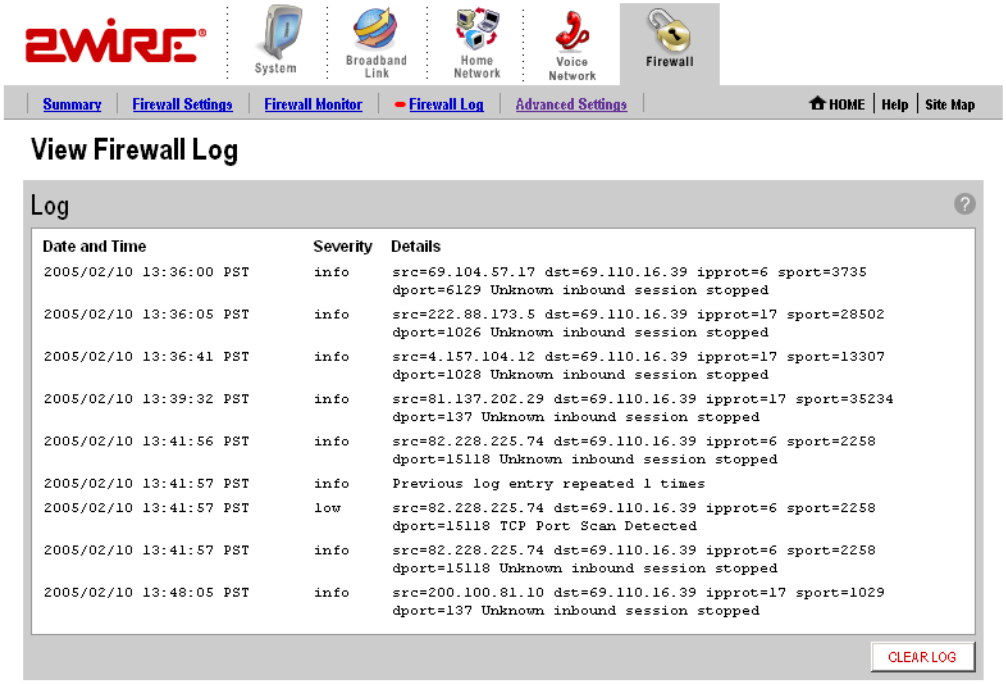
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Firewall Monitor
Firewall Log
Advanced Settings
HOME
Help
Site Map
View Firewall Log
Log
Date and Time
Severity
Details
2005/02/10 13:36:00 PST info src=69.104.57.17 dst=69.110.16.39 ipprot=6 sport=3735 dport=6129 Unknown inbound session stopped
2005/02/10 13:36:05 PST info src=222.88.173.5 dst=69.110.16.39 ipprot=17 sport=28502 dport=1026 Unknown inbound session stopped
2005/02/10 13:36:41 PST info src=4.157.104.12 dst=69.110.16.39 ipprot=17 sport=13307 dport=1028 Unknown inbound session stopped
2005/02/10 13:39:32 PST info src=81.137.202.29 dst=69.110.16.39 ipprot=17 sport=35234 dport=137 Unknown inbound session stopped
2005/02/10 13:41:56 PST info src=82.228.225.74 dst=69.110.16.39 ipprot=6 sport=2258 dport=15118 Unknown inbound session stopped
2005/02/10 13:41:57 PST info Previous log entry repeated 1 times
2005/02/10 13:41:57 PST low src=82.228.225.74 dst=69.110.16.39 ipprot=6 sport=2258 dport=15118 TCP Port Scan Detected
2005/02/10 13:41:57 PST info src=82.228.225.74 dst=69.110.16.39 ipprot=6 sport=2258 dport=15118 Unknown inbound session stopped
2005/02/10 13:48:05 PST info src=200.100.81.10 dst=69.110.16.39 ipprot=17 sport=1029 dport=137 Unknown inbound session stopped
CLEAR LOG

Figure 21. View Firewall Log Page

The following table provides additional information about the log entries.

Severity	• Info. Informational only—the event does not imply a threat to network security. • Low. Occurs when the firewall detects a low-level threat to the network, such as an invalid IP header or invalid packet length. • Medium. Occurs when a medium-level threat is detected, such as an invalid IP fragment offset. • High. Occurs when an attack is launched against the network (for example, a SYN Flood).
Details	Includes the following information: • The IP address from which the packet originated. • The destination IP address of the packet. • The action that was taken.

Click **CLEAR LOG** to clear the log.

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Configuring the Firewall (Advanced)

The Edit Advanced Firewall Settings page allows you to configure advanced features on your firewall.

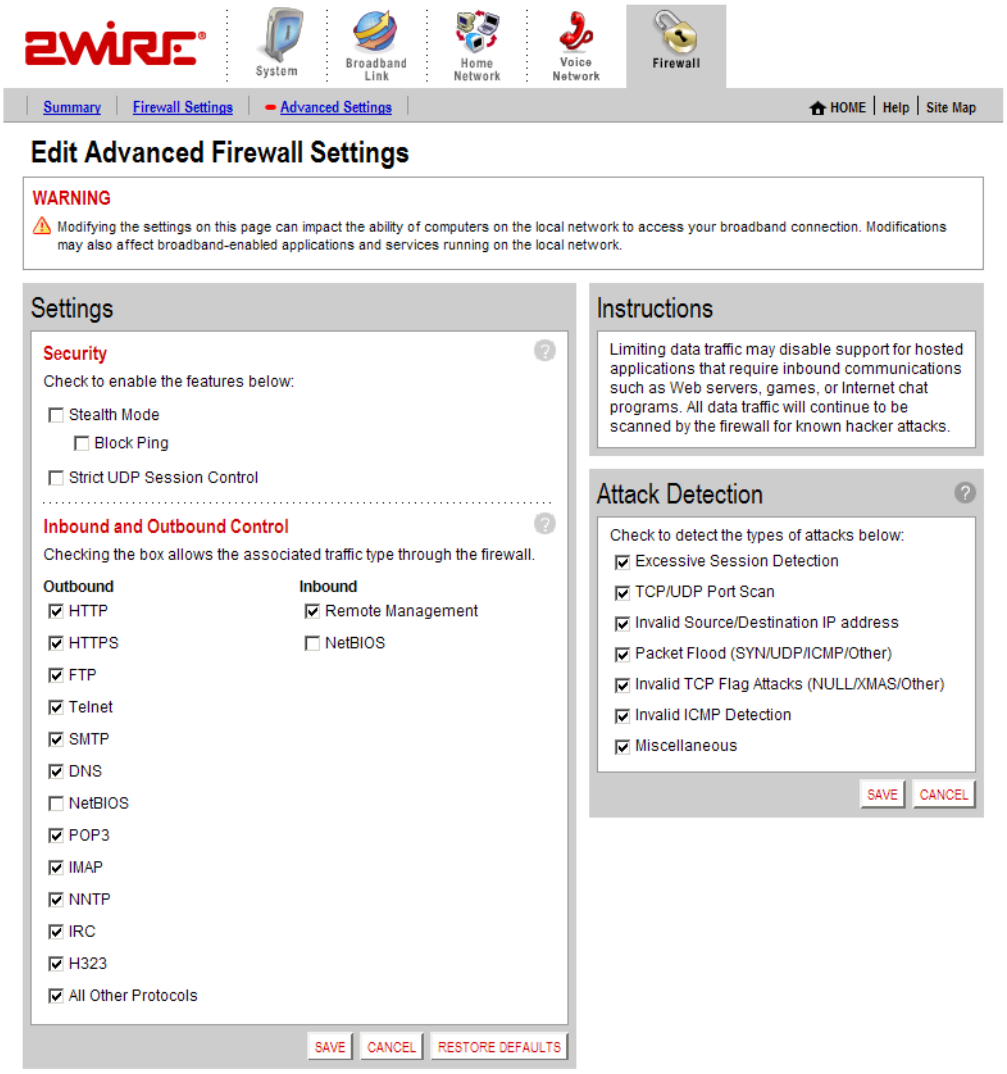

Figure 22. Edit Advanced Firewall Settings Page

Note: These features should be used only if you are thoroughly familiar with firewalls and networking.

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Enabling Advanced Security

Your 2Wire gateway firewall already provides a high level of security. You can configure the firewall to provide advanced security features, including stealth mode, strict UDP, or block pings.

Stealth Mode

In normal firewall operation, when an unknown remote device makes a request to connect to a user's network the firewall does not allow the connection to be made and responds with a "connection not available" message. This may not discourage a determined hacker, because the message confirms that there is an active network sending the response. The hacker may then use more sophisticated tools in an attempt to access your network.

When in stealth mode, the 2Wire gateway firewall does not return *any* information in response to network queries; that is, it will appear to the hacker who is trying to access your network that your network does not exist. This discourages hackers from further attempts at accessing your network, because to them it will appear as though there is no active network to access.

To enable Stealth Mode:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.

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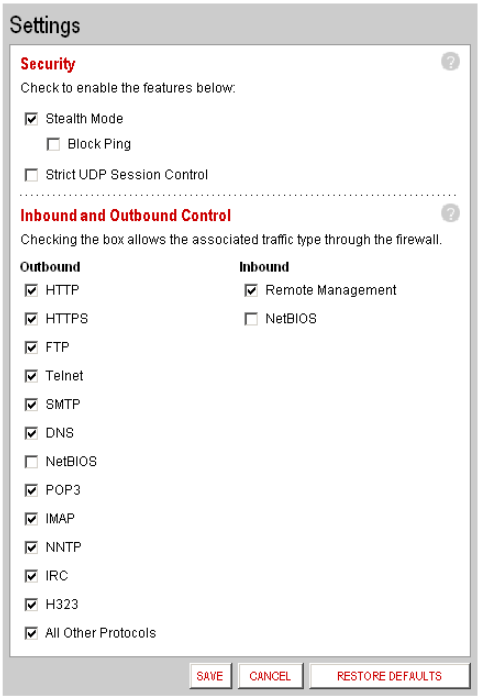
- Click the Advanced Settings link under the tab to open the Edit Advanced Firewall Settings page.



1. In the Security pane, click the **Stealth Mode** checkbox.
2. Click **SAVE**.

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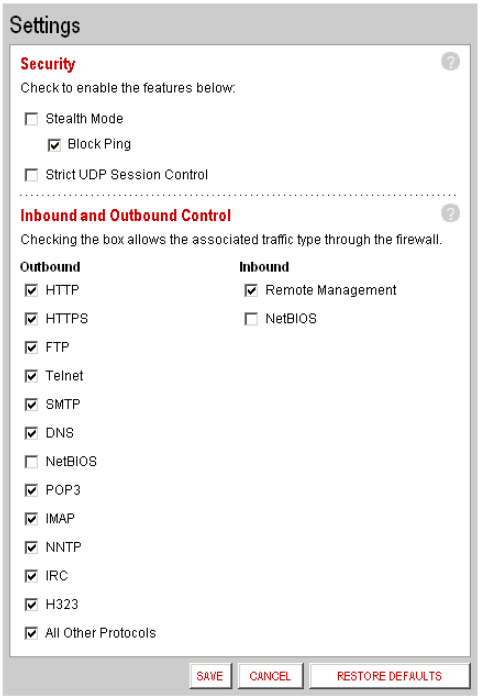
Block Ping

Ping is a basic Internet program that, when used without malicious intent, allows a user to verify that a particular IP address exists and can accept requests. Ping is used diagnostically to ensure that a host computer you are trying to reach is operating. It can also be used to see how long it takes to get a response back from a specific host computer.

Hackers can use ping to launch an attack against your network, because ping can determine the number form of the network's IP address (for example, 105.246.172.72) from the domain name (for example, www.mynetwork.com). If you enable Block Ping, your network will block all ping requests.

To block ping:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Advanced Settings link under the tab to open the Edit Advanced Firewall Settings page.



1. In the Security pane, click the **Block Pings** checkbox.
2. Click **SAVE**.

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Strict UDP Session Control

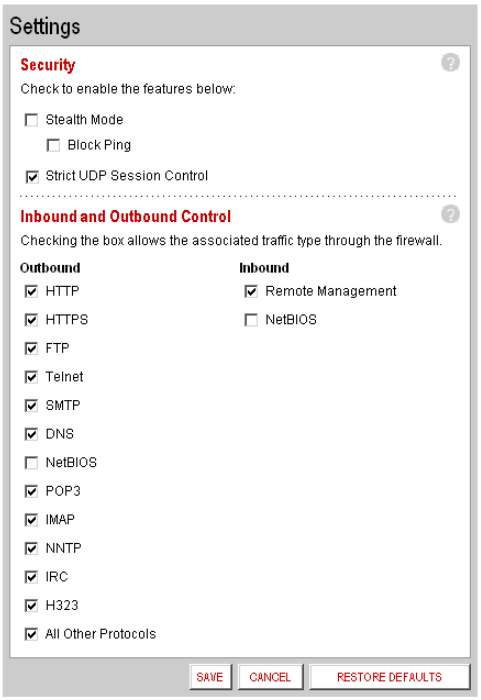
Enabling this feature provides increased security by preventing the 2Wire gateway from accepting packets sent from an unknown source over an existing connection.

Strict UDP instructs the 2Wire gateway to be more restrictive about what packets are allowed to transmit over an established connection from a local network computer to the Internet. In addition to relying on information about the destination (3-tuple), the 2Wire gateway will also use information about the source of the connection (5-tuple).

Note: The ability to send traffic based on destination only is required by some applications. Enabling this feature may not allow some on-line applications to work properly.

To enable strict UDP session control:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Advanced Settings link under the tab to open the Edit Advanced Firewall Settings page.



1. In the Security pane, click the **Strict UDP Session Control** checkbox.
2. Click **SAVE**.

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Allowing Inbound and Outbound Traffic

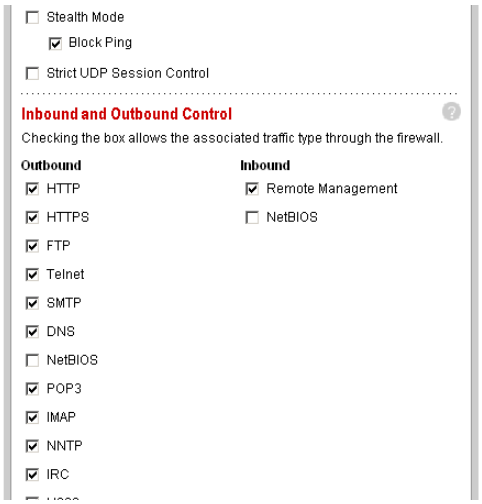
The Inbound and Outbound Control pane displays some common protocol types. When one of the Inbound protocol boxes is checked, the firewall allows the corresponding protocol to pass through from the Internet to the network. If one of the Outbound protocol boxes is checked, the firewall allows the traffic from the network to pass through the firewall to the Internet.

Note: If you configure the firewall to block an Inbound protocol, you may disable support for hosted applications that require that type of protocol.

To block an Inbound or Outbound protocol:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.
- Click the Advanced Settings link under the tab to open the Edit Advanced Firewall Settings page.

1. In the Inbound and Outbound Control pane, deselect the checkbox of the protocol you wish to block.
2. Click **SAVE**.



Disabling Attack Detection

By default, the 2Wire gateway firewall rules block the attack types listed in the Attack Detection pane. There are some applications and devices that require the use of specific data ports through the firewall. The gateway allows users to open the necessary ports through the firewall using the Firewall Settings page. If the user requires that a computer have all incoming traffic available to it, this computer can be set to the DMZplus mode. While in DMZplus mode, the computer is still protected against numerous broadband attacks (for example, SYN Flood or Invalid TCP flag attacks).

In rare cases, the incoming traffic may be inadvertently blocked by the firewall (for example, when integrating with external third-party firewalls or VPN servers). You may need to disable one or more of the attack detection capabilities for any device placed in the DMZplus. In this case, the third-party server provides the attack protection normally provided by the gateway.

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The following table lists the attacks for which the gateway firewall filters continuously check.

Attack	Description and Action Taken
Excessive Session Detection	When enabled, the firewall will detect applications on the local network that are creating excessive sessions out to the Internet. This activity is likely due to a virus or "worm" infected computer (for example, Blaster Worm). When the event is detected, the gateway displays a HURL warning page.
TCP/UDP Port Scan	A port scan is a series of messages sent by someone attempting to break into a computer to learn which computer network services, each associated with a well-known port number (such as UDP and TCP), the computer provides. When enabled, the firewall detects UDP and TCP port scans, and drops the packet.
Invalid Source/Destination IP address	When enabled, the firewall will verify IP addresses by checking for the following: IP source address is broadcast or multicast — drop packet. TCP destination IP address is not unicast — drop packet. IP source and destination address are the same — drop packet. Invalid IP source received from private/home network — drop packet.
Packet Flood (SYN/UDP/ICMP/ Other)	When enabled, the firewall will check for SYN, UDP, ICMP, and other types of packet floods on the local and Internet facing interfaces and stop the flood.
Invalid TCP Flag Attacks (NULL/ XMAS/Other)	When enabled, the firewall will scan inbound and outbound packets for invalid TCP Flag settings, and drop the packet to prevent SYN/FIN, NULL, and XMAS attacks.
Invalid ICMP Detection	The firewall checks for invalid ICMP/code types, and drops the packet.
Miscellaneous	The firewall checks for the following: Unknown IP protocol — drop packet. Port 0 attack detected — drop packet. TCP SYN packet — drop packet. Not a start session packet — drop packet. ICMP destination unreachable — terminate session.

To disable attack detection for a specific port:

- Open a Web browser and access the 2Wire gateway user interface by entering http://gateway.2wire.net.
- Click the **Firewall** tab.

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- Click the Advanced Settings link under the tab to open the Edit Advanced Firewall Settings page.

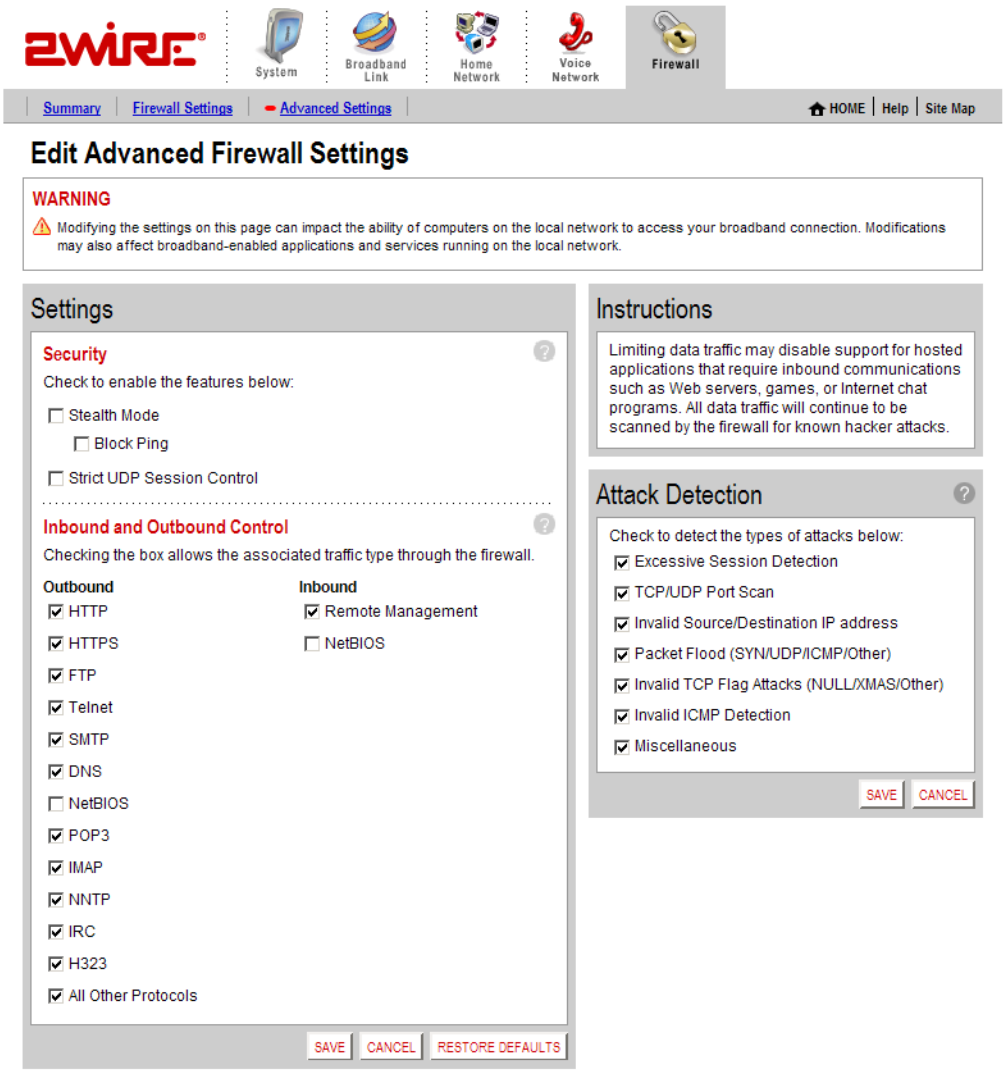

Figure 23. Edit Advanced Firewall Settings Page

1. In the Attack Detection panel, deselect the appropriate checkbox.
2. Click **SAVE**.

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Management and Diagnostic Console

This chapter describes the 2Wire gateway Management and Diagnostic Console (MDC). The Management and Diagnostic Console provides information about the status of the 2Wire gateway, its broadband network connections, attached home networking devices, system and security information, and a running log of any error conditions.

You can use the tools provided to:

- View configuration and service provisioning information.
- View operation logs.
- Perform diagnostic tests.
- Configure the gateway.

The following sections describe how to access the Management and Diagnostic Console, use the diagnostic and configuration tools, and modify settings.

Note: The MDC pages available are dependent on the 2Wire gateway software release. The MDC pages shown in this chapter are for 2Wire gateways running software release 4.21.x If your gateway is running a software release earlier than 4.21.x, some of these pages may not be available.

Accessing the MDC

To access the MDC from your in-home or office network, enter the following URL:
http://gateway.2wire.net/management

Using the MDC

After you access the Management and Diagnostic Console, a navigation bar allows you to quickly select pages on the site. The navigation bar consists of the following links:

Group	Link
Summary	System Summary
Broadband Link	Summary
	Statistics
	Detailed Statistics
	Configure
Local Network	Status
	Statistics

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Group	Link
Local Network	
	Device List
	Wireless
	Configure
Firewall	Settings
	Detailed Information
	Advanced Settings
Voice	Summary
	Configure Server
	Configure Line Association
Troubleshooting	DSL Diagnostics
	Event Log
	Network Tests
	Upgrade History
	Resets
Advanced	Syslog Settings
	Provisioning Info
	Configure Time Services
	Configure Services
	Static Routes
	DNS Resolve
	Traffic Shaping
	Link Manager
	Detailed Log

Note: The link groups that display are dependent on the 2Wire gateway model. For example, DSL Diagnostics will display only if a user has a gateway that connects to the Internet via DSL.

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System Summary Page

The System Summary page shows general information about the 2Wire gateway, its configuration, and components. For example, it shows the hardware and software version being used by the 2Wire gateway.

Broadband Link Pages

The Broadband Link pages show summary, detailed status, and statistical information about the 2Wire gateway broadband link; and lets you change configuration settings. For example, the Statistics page shows current upstream and downstream DSL data rates.

Local Network Pages

Local Network pages show the general operating status of the home network, and statistics associated with network interfaces. For example, the Statistics page shows the transmit and receive packet count for Ethernet, Wireless, HomePNA, and USB interfaces.

Firewall Pages

Firewall pages allow you to access settings and detailed information for the gateway's firewall, and to configure the firewall if necessary. For example, you can use the Firewall Settings page to access applications that are usually blocked by the firewall.

Voice Pages

Voice pages show summary information about the VoIP network, and allow you to configure the servers and voice lines. For example, the Voice - Configure Server page allows you to set up your VoIP server.

Troubleshooting Pages

Troubleshooting pages allow you to view detailed logs that maintain a record of all significant 2Wire gateway events, and to perform diagnostic tests. For example, if you are experiencing connection problems you can use the Ping tool on the WAN Tests page to ensure that the 2Wire gateway can "ping" a designated IP address.

Advanced Pages

Advanced pages provide detailed information and sophisticated diagnostics that, in general, should only be accessed by technically advanced users.

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Remote Management Feature

Management and Diagnostic Console pages that affect gateway configuration can be accessed remotely *only* if your organization has enabled the Remote Management feature. If the feature is not enabled, an error message will display when you click the link to access the following pages.

- Broadband Link - Configuration
- Local Network - Configuration
- Firewall - Settings
- Firewall - Detailed Information
- Firewall - Advanced Settings
- Troubleshooting - Configure Logs
- Troubleshooting - Resets
- Advanced - Syslog Settings
- Advanced - Configure Time Services
- Advanced - Configure Services
- Advanced - Static Routes
- Advanced - DNS Resolve
- Advanced - Traffic Shaping

The following section shows Management and Diagnostic Console pages and describes how to use the information provided to troubleshoot the 2Wire gateway.

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System Summary Page

The System Summary page shows general information about the 2Wire gateway, its configuration, and components.

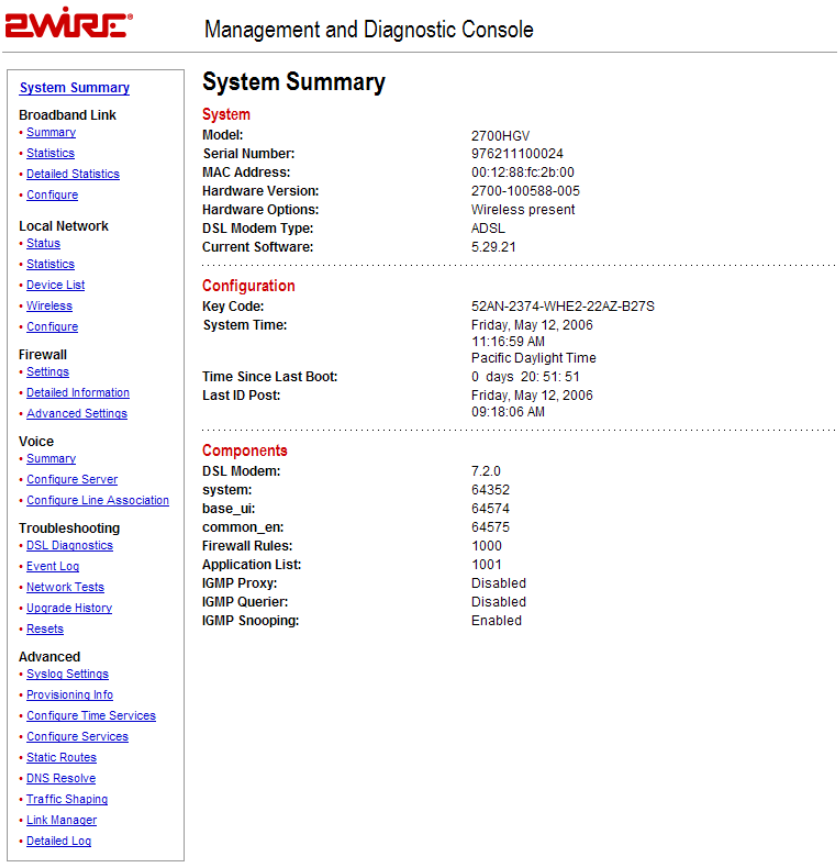

Figure 24. MDC System Summary Page

Depending on the service provider and the components installed, the System Summary page includes the following information:

Item	Description
System	
Model	2Wire gateway model number (for example, “2700HGV Gateway”).
Serial Number	2Wire gateway serial number.
MAC Address	2Wire gateway MAC address.

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Item	Description
Hardware Version	2Wire gateway hardware version.
Hardware Options	The type of peripheral device installed.
DSL Modem Type	ADSL or ISDN.
Current Software	2Wire gateway software version.
Configuration	
Key Code	The key code associated with the current provisioning settings. The value is Unprovisioned if the 2Wire gateway has not yet been provisioned.
System Time	The day, month, year, and time; or “Retrieving date and time settings from Internet” if not set.
Time Since Last Boot	The time elapsed since the 2Wire gateway was last restarted.
Last ID Post	The time elapsed since the 2Wire gateway communicated with the configuration server.
Components	
DSL Modem	DSL modem software version.
Firewall Rules	Current version of the installed firewall rules database.
Application List	Current version of the application list.

Note: The contents of the Components list varies according to service provider-specific information. For example, the Components list may contain language files (such as common_en, common_es, or common_fr); user interface files (such as base_ui); or VoIP files (such as base_voice).

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Broadband Link - Summary Page

The Broadband Link - Summary page allows you to view 2Wire gateway broadband connectivity-related settings, and reset the Broadband Link and ISP Connection.

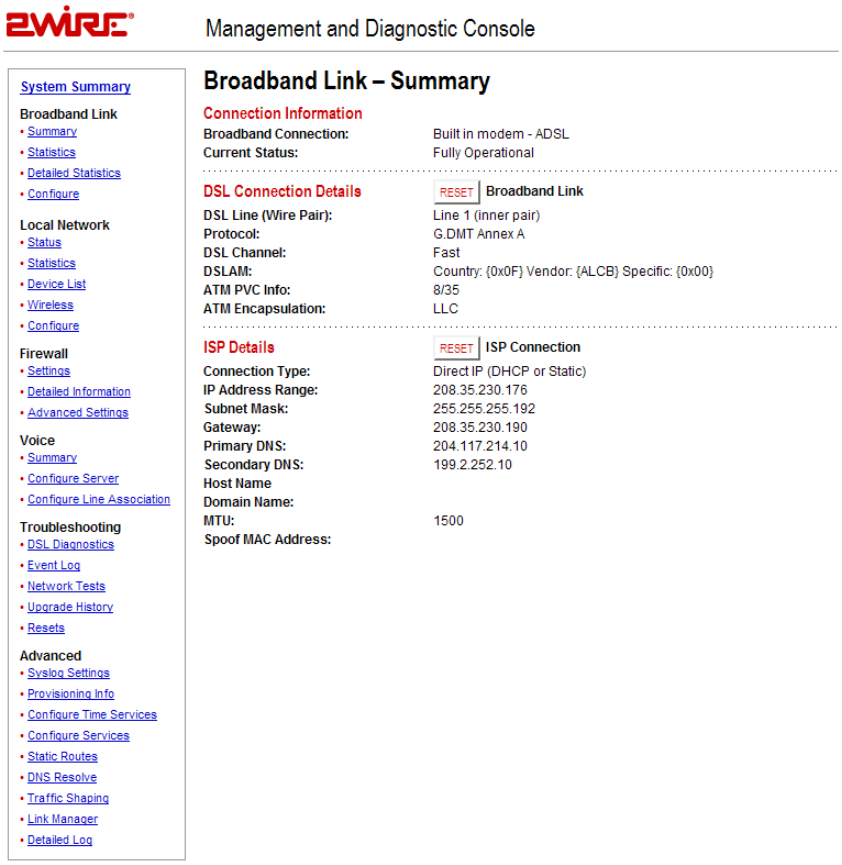

Figure 25. MDC Broadband Link Summary Page

The Broadband Link – Summary page includes the following information:

Item	Description
Connection Information	
Broadband Connection	Built-in ADSL Modem or External Broadband Modem via Ethernet.

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Item	Description
Current Status	The current operating condition of the broadband link. **Fully operational.** The broadband link is operational (including connection to ISP and other services). **Initializing.** The broadband link is preparing to connect. **Establishing link.** The broadband link is connecting. **No physical link signal.** No physical signal detected on the broadband link. **Physical connection.** The broadband link is connected. **Error.** There is a broadband link error.
DSL Connection Details (for DSL models only)	
DSL Line (Wire Pair)	Line 1 (inner pair), Line 2 (outer pair), or Searching for DSL signal. During installation, the 2Wire gateway auto detects whether the DSL signal is on line 1 or line 2.
Protocol	G.dmt, G.lite, or ANSI (T1.413).
DSL Channel	Fast or Interleaved.
DSLAM	DSLAM vendor identification. For G.dmt or G.lite protocol, values are Country, Vendor, and Specific. For ANSI (T1.413) protocol, values are ID, Rev (Revision), and Std (Standard).
ATM PVC Info	The ATM VPI/VCI.
ATM Encapsulation	LLC or VCMux.
ISP Details	
Connection Type	The method by which the 2Wire gateway connects to the ISP: Direct_IP, PPPoA, or PPPoE. For the HomePortal 1000, direct uses an RFC2684 (formerly RFC 1483) bridged Ethernet connection without FCS (PID=0x00-07) format.
User Name	The 2Wire gateway user name.
PPPoE Access Concentrator	This field is present only when the connection type is PPPoE.
PPPoE Service	The type of PPPoE services being used. This field is present only when the connection type is PPPoE.
IP Address Range	The broadband address of the 2Wire gateway.
Subnet Mask	The subnet mask to be used by the 2Wire gateway on the broadband link.
Gateway	The IP address of the default gateway (default router) that the 2Wire gateway connects to on the broadband link.

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Item	Description
Primary DNS	The IP address of the primary DNS server that the 2Wire gateway is to use for DNS name resolution on the broadband link.
Secondary DNS	The IP address of the secondary DNS server that the 2Wire gateway is to use for DNS name resolution on the broadband link.
Host Name	The 2Wire gateway host name. This field is only present if the user configures the 2Wire gateway with a host name.
Domain Name	The domain name associated with the 2Wire gateway on the broadband link.
MTU	Maximum size of the packets sent from a computer to the network.
Spoof MAC Address	Either Disabled (if the default factory-set MAC address is used) or Enabled (if the computer's MAC address is used).

If there is an error on the broadband link or with the ISP connection, click the **Reset Broadband Link** or **Reset ISP Connection** button to reset the connections.

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Broadband Link - Statistics Page

The Broadband Link - Statistics page shows statistics associated with the 2Wire gateway broadband link.

Note: To update the information displayed on this page, click the browser's Refresh button.

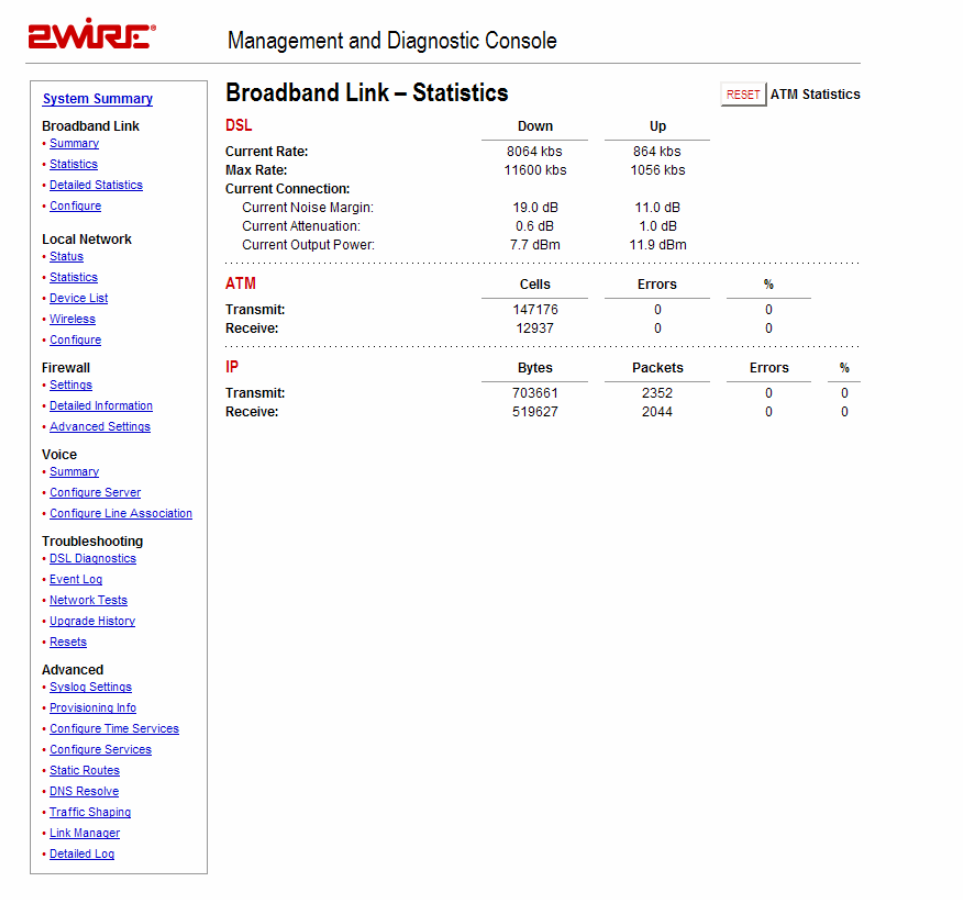

Figure 26. MDC Broadband Link Statistics Page

The Broadband Link – Statistics page includes the following information:

Item	Description
DSL (for DSL models only)	
Current Rate	The DSL downstream and upstream rate, in kilobits.
Max Rate	The maximum DSL downstream and upstream rate, in kilobits.

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Item	Description
Current Connection	**Current Noise Margin.** The current downstream and upstream noise margin in dB. **Current Attenuation.** The current downstream and upstream DSL attenuation in dB. **Current Output Power.** The current downstream and upstream DSL transmit and receive power in dB.
ATM	
Transmit	The cumulative number of cells transmitted, and the number and percentage transmitted in error.
Receive	The cumulative number of cells received, and the number and percentage received in error.
IP	
Transmit	The cumulative number of IP packets transmitted, the cumulative number of IP payload bytes transmitted, and the number and percentage transmitted in error.
Receive	The number of bytes and packets received, and the number and percentage received in error.

To reset the broadband link statistics, click the **Reset** button.

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Broadband Link - Detailed DSL Statistics Page

Note: This link is present only if the 2Wire gateway connects to the Internet via ADSL.

The Broadband Link – Detailed DSL Statistics page shows a set of cumulative DSL statistics associated with the 2Wire gateway.

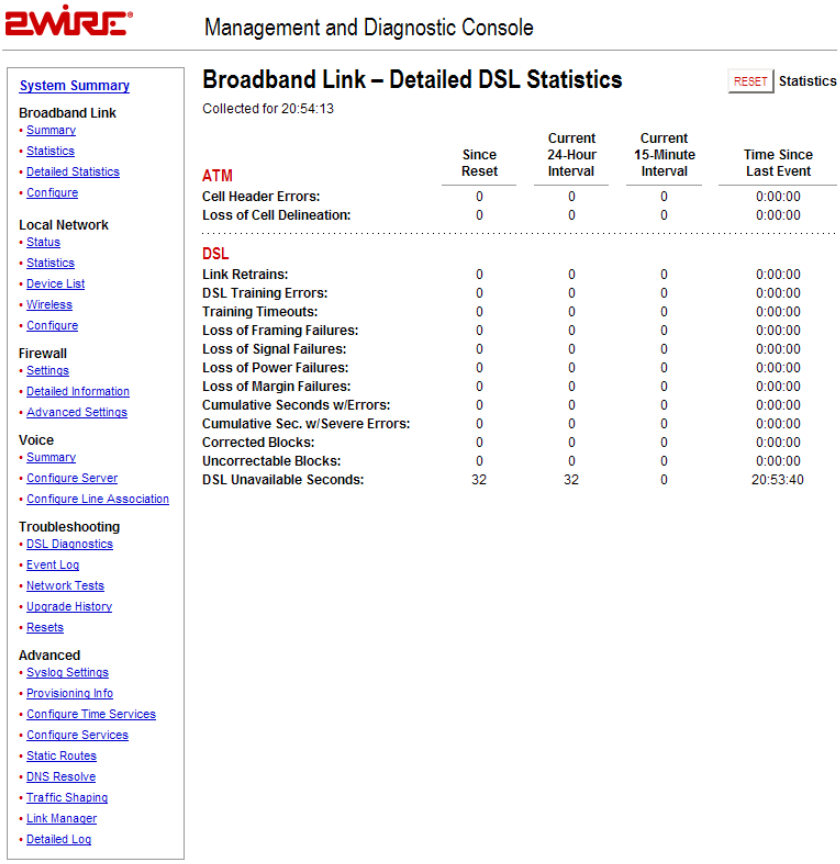

Figure 27. MDC Broadband Link Detailed DSL Statistics Page

Note: To update the information displayed on this page, click the browser's Refresh button.

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The Broadband Link – Detailed DSL Statistics page includes the following information:

Item	Description
ATM	
Cell Header Errors	The number of ATM cell header CRC errors since the 2Wire gateway was last restarted, and the elapsed time since the last cell header error.
Loss of Cell Delineation	The number of ATM loss of cell delineation errors since the 2Wire gateway was last restarted, and the elapsed time since the last loss of cell delineation error.
DSL	
Link Retrains	The number of DSL retrains since the 2Wire gateway was last restarted, and the time elapsed since the last retrain.
DSL Training Errors	The number of failed DSL retrains since the 2Wire gateway was last restarted, and the elapsed time since the last failed retrain.
Training Timeouts	The number of timeouts waiting for response from ATU-C since the 2Wire gateway was last restarted, and the elapsed time since the last initialization timeout.
Loss of Framing Failures	The number of DSL loss of framing failures since the 2Wire gateway was last restarted, and the elapsed time since the last line search initialization.
Loss of Signal Failures	The number of DSL loss of signal failures since the 2Wire gateway was last restarted, and the elapsed time since the last loss of signal failure.
Loss of Power Failures	The number of DSL loss of power indications from the ATU-C since the 2Wire gateway was last restarted, and the elapsed time since the last loss of power indication.
Loss of Margin Failures	The number of DSL loss-of-margin failures at current data rate since the 2Wire gateway was last restarted, and the elapsed time since the last loss of margin failure.
Cumulative Seconds w/Errors	The number of cumulative errored seconds since the 2Wire gateway was last restarted, and the elapsed time since the last error.

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Item	Description
Cumulative Sec.w/Severe Errors	The number of severely errored seconds since the 2Wire gateway was last restarted, and the elapsed time since the last severely errored second.
Corrected Blocks	The number of corrected DSL superframes that had data errors detected during reception.
Uncorrectable Blocks	The number of uncorrected DSL superframes that had data errors detected.
DSL Unavailable Seconds	The number of unavailable seconds (modem downtime) since the 2Wire gateway was last restarted, and the elapsed time since the last unavailable second.
ISP Connection Establishment	The number of times the ISP connection was established since the statistics were last reset, and the elapsed time since the last establishment.

To reset the DSL statistics, click the **Reset** button.

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Broadband Link - Configuration Page

The Broadband Link – Configuration page allows you to modify specific broadband connection settings.

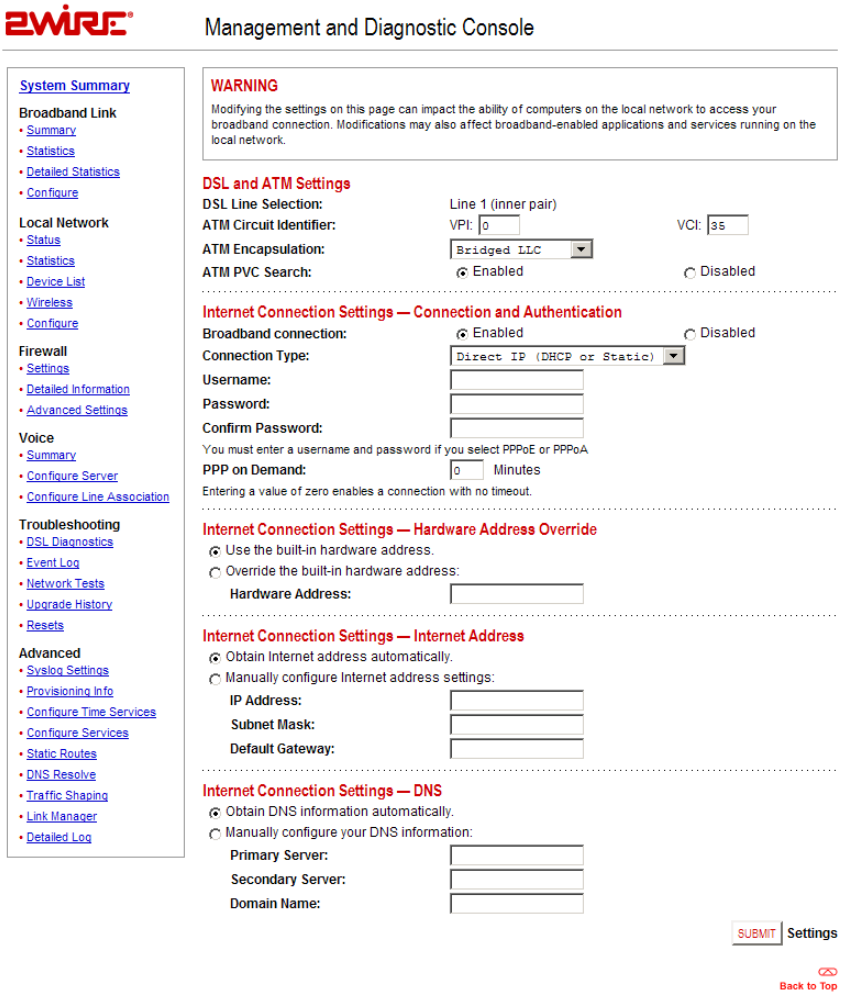

Figure 28. MDC Broadband Link Configuration Page

Note: Modifying the settings on this page can impact the ability of computers on the local network to access the broadband connection. You should modify these settings ONLY if you are thoroughly familiar with networking.

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Modifying DSL and ATM Settings

By default, the gateway automatically detects which DSL line to use. The DSL and ATM Settings pane allows you to select a DSL line and manually configure your ATM settings.

To modify DSL or ATM settings:

1. From the DSL Line Selection pull-down, select Automatic, Line 1(inner pair), or Line 2 (outer pair).
2. In the ATM Circuit Identifier VPI and VCI fields, enter the VPI and VCI you want the gateway to use to connect to the ISP.
3. From the ATM Encapsulation pull-down menu, select **VC-Mux** or **LLC**.
4. In the ATM/PVC Search field, click the **Enabled** or **Disabled** radio button.
5. Click the **Submit** button.

Modifying Internet Connection and Authentication Settings

The Internet Connection Settings - Connection and Authentication pane allows you to modify the method by which you connect to the Internet.

To modify Internet connection and authentication settings:

1. Ensure that the Broadband connection **Enabled** radio button is selected (default).
2. From the Connection Type pull-down menu, select the connection type (either Direct IP (DHCP or Static), PPPoE, or PPPoA).

   If you connect via PPPoE or PPPoA, proceed to step 2. If you connect via Direct IP, proceed to step 5. Direct IP connection does not require a user name or password.
3. In the Username field, enter your user name.
4. In the Password field, enter your password.
5. In the Confirm Password field, re-enter your system password.
6. Click the **Submit** button.

The PPP on Demand field allows you to enable PPP on-demand. If the value is set to 0 minutes, the PPP session will be persistent (always-on). If the value is between 1 to 10080 minutes, the PPP session will timeout if the 2Wire gateway does not detect outbound traffic destined for the Internet in the specified time. When the 2Wire gateway detects outbound traffic, the session is reestablished.

Note: By default, the minimum timeout value is 3 minutes.

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Modifying Hardware Address

By default, the 2Wire gateway uses its built-in hardware address. The Internet Connection Settings - Hardware Address Override pane allows you to manually override the MAC address of the broadband connection, which is sometimes required for cable modems that perform MAC address authentication.

To modify the hardware address:

1. Click the **Override the built-in hardware address** radio button.
2. In the Hardware Address field, enter the alternative hardware address.
3. Click the **Submit** button.

Modifying Internet Address Settings

By default, the 2Wire gateway automatically obtains its Internet address. The Internet Connection Settings - Internet Address pane allows you to manually configure your Internet address settings.

To manually configure your Internet address settings:

1. Click the **Manually configure Internet address settings** radio button.
2. In the IP Address field, enter the IP address you want the 2Wire gateway to use.
3. In the Subnet Mask field, enter the subnet mask you want the 2Wire gateway to use.
4. In the Default Gateway field, enter the default gateway address you want the 2Wire gateway to use.
5. Click the **Submit** button.

Modifying DNS Information

By default, the 2Wire gateway automatically obtains DNS server addresses via DHCP. The Internet Connection Settings - DNS pane allows you to manually configure your DNS information.

To manually configure your DNS information:

1. Click the **Manually configure your DNS information** radio button.
2. In the Primary Server field, enter the IP address of the primary DNS server that the 2Wire gateway is to use for DNS name resolution.
3. In the Secondary Server field, enter the IP address of the secondary DNS server that the 2Wire gateway is to use for DNS name resolution.
4. In the Domain Name field, enter the specific domain name to be used by the 2Wire gateway.
5. Click the **Submit** button.

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Local Network - Status Page

The Local Network – Status page shows the status of the local network.

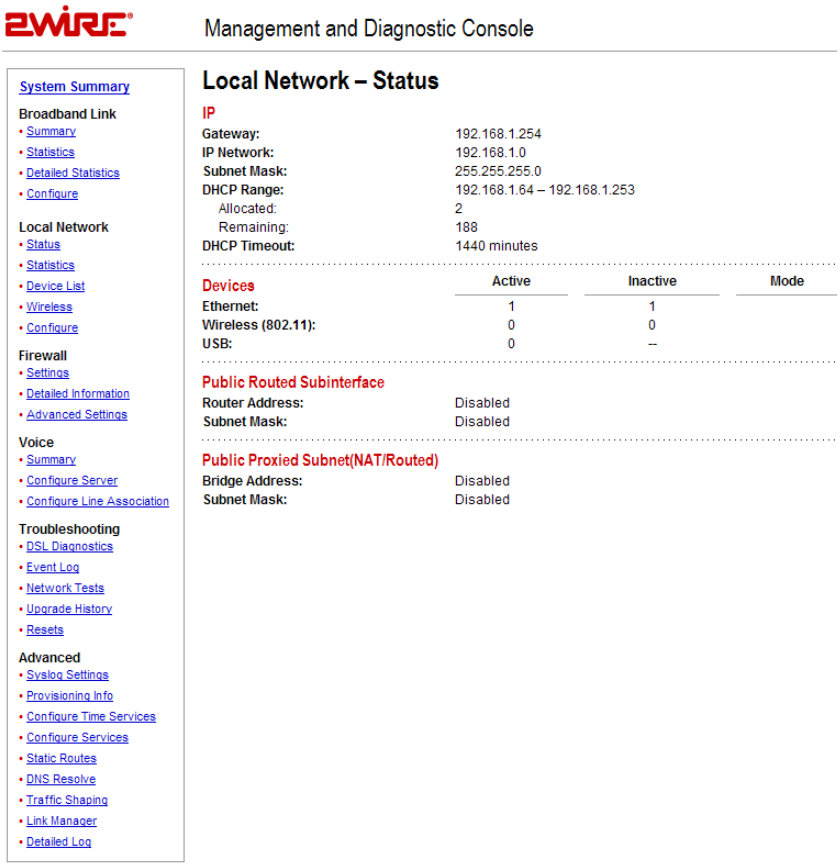

Figure 29. MDC Local Network Status Page

The Local Network – Status page includes the following information:

Item	Description
IP	
Gateway	The IP address allocated to the 2Wire gateway.
IP Network	The IP address used by the network.
Subnet Mask	The subnet mask allocated to the 2Wire gateway.
DHCP Range	The range of IP addresses available on the network, the number of addresses Allocated, and the number of addresses Remaining.

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Item	Description
DHCP Timeout	The time, in minutes, before the DHCP lease must be renewed.
Devices	
Ethernet	The number of Active and Inactive Ethernet devices on the network.
Wireless (802.11)	The number of Active and Inactive wireless devices on the network.
USB	Specifies whether a USB device is present (Active) on the network. If a USB device is not present, the value is Inactive.
Public Network	
Router Address	Defines a separate network on the home side.
Subnet Mask	The subnet mask allocated for public address.
Bridge Network	
Router Address	Creates a bridge network with the broadband.
Subnet Mask	The subnet mask allocated for public address.

Note: If you have Enhanced Services (such as Internet Access Control) installed, the specific service and its status display in the Devices panel.

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Local Network - Statistics Page

The Local Network – Statistics page shows information about the interfaces on the local network.

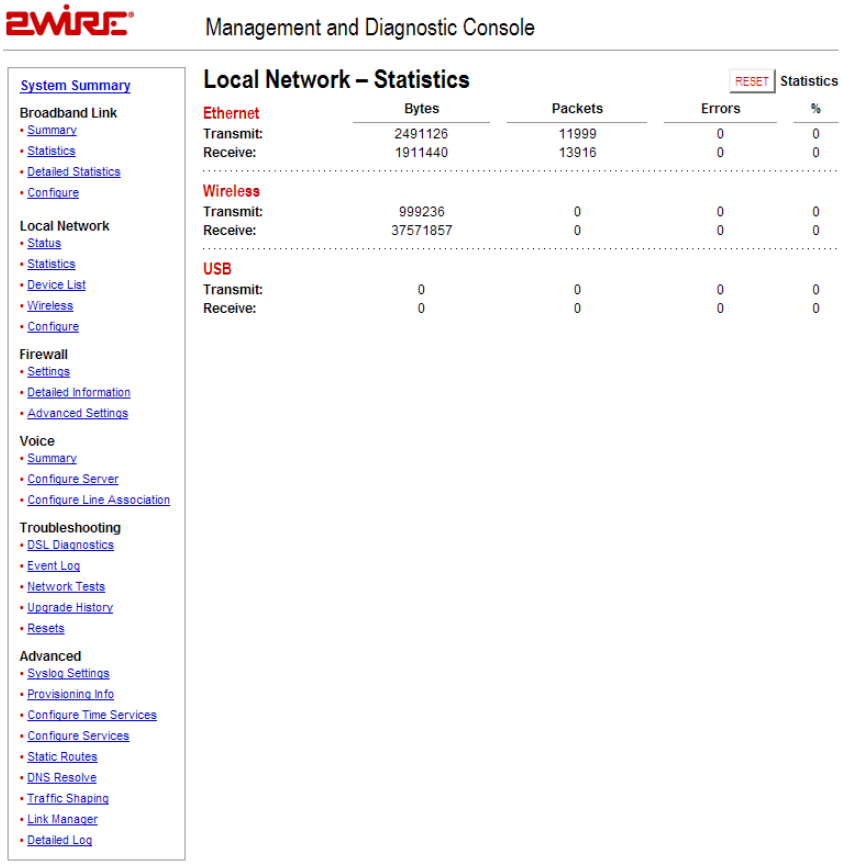

Figure 30. MDC Local Network Statistics Page

The Local Network – Statistics page includes the following information:

Item	Description
Ethernet	
Transmit	The cumulative number of frames transmitted over the Ethernet home network interface, the number of payload bytes transmitted, and the number and percentage of transmitted packets in error.

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Item	Description
Receive	The cumulative number of frames received over the Ethernet home network interface, the number of payload bytes received, and the number and percentage of received packets in error.
Wireless (this field is present only on wireless 2Wire gateway models)	
Transmit	The cumulative number of frames transmitted over the wireless home network interface, the number of payload bytes transmitted, and the number and percentage of transmitted packets in error.
Receive	The cumulative number of frames received over the wireless home network interface, the number of payload bytes received, and the number and percentage of received packets in error.
USB	
Transmit	The cumulative number of frames transmitted over the USB home network interface, the number of payload bytes transmitted, and the number and percentage of transmitted packets in error.
Receive	The cumulative number of frames received over the USB home network interface, the number of payload bytes received, and the number and percentage of received packets in error.

To reset the local network statistics, click the **Reset** button.

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Local Network - Device List Page

The Local Network - Device List page displays information about each device in the local network.

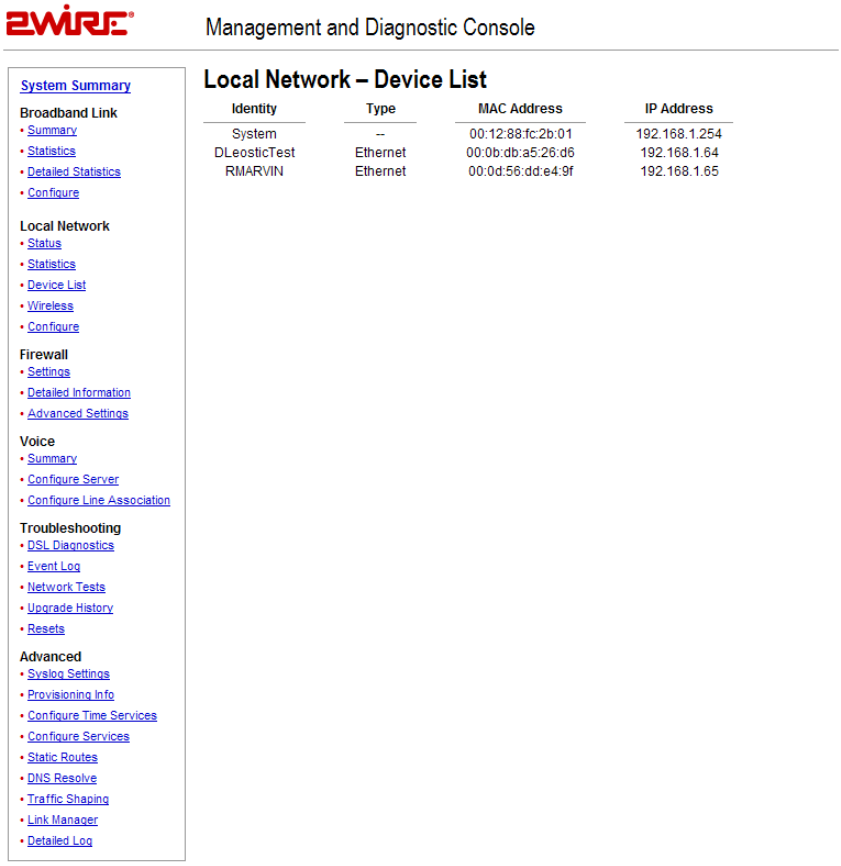

Figure 31. MDC Local Network Device List Page

The following information is displayed.

- **Identity.** The name of the device. If the device does not have a name associated with it, the device IP address is displayed.
- **Type.** The type of connection used by the device to connect to the local network: Ethernet, USB, or Wireless.
- **MAC Address.** The hardware address used by the device.
- **IP Address.** The IP address used by the device.

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Local Network - Wireless Settings Page

The Local Network - Wireless Settings page allows you to view or change the wireless settings with which your gateway is configured.

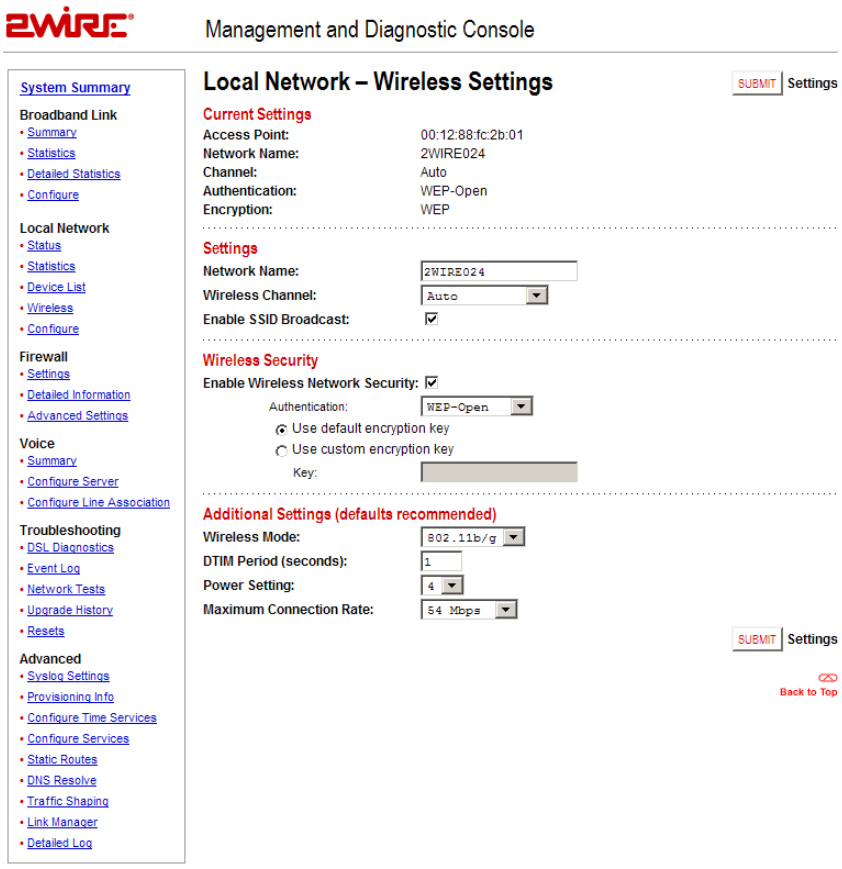

Figure 32. MDC Local Network Wireless Settings Page

The Current Settings panel shows the 2Wire gateway's wireless access point settings.

- **Access Point.** The designated name of the wireless access point.
- **Network Name.** The name assigned to your wireless network. The default is 2WIREXXX, where XXX represents the last three digits of your 2Wire gateway serial number (for example, 2WIRE954).
- **Channel.** The radio frequency band the access point uses for your wireless network (the default is 6). Wireless adapter cards auto-detect the channels to use. If you are having problems with your wireless network, it could be due to radio interference. You can change the wireless channel to see if interference is reduced on a different channel.
- **Authentication.** The security method used to ensure that users are authorized to access the wireless network: WEP-Open, WEP-Shared, or WPA-PSK.
- **Encryption.** The security setting that makes it difficult for unauthorized users to access your network.

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The Settings panel allows you to change the Network Name and Wireless Channel, and enable SSID broadcast.

Customizing Security Settings

You should always enable encryption for wireless communication. When encryption is enabled, you must define an encryption key for the 2Wire gateway's wireless access point and configure that same key on each wireless client that will use your 2Wire gateway wireless network.

Note: If encryption is enabled, each wireless client must be configured with the encryption key defined on the system before it can operate on your wireless network.

You can customize the following wireless settings in the Wireless Security panel.

1. From the Authentication pull-down menu, select an authentication setting: WEP-Open, WEP-Shared, or WPA-PSK.

   Open authentication allows users to configure their wireless adapter as either Open or Shared; in either case an encryption key is required. Shared authentication allows users to configure their wireless adapter for Shared authentication, which requires an encryption key. WPA-PSK requires that users configure their wireless adapter using TKIP.

2. To use the encryption key that came with your gateway, click the **Use default encryption key** radio button. To create a custom encryption key, click the **Use custom encryption key** radio button.

   If you select **Use custom encryption key**, you can define a 64-bit or 128-bit encryption key. For 64-bit encryption, in the Key field enter a 10-digit hexadecimal number. For 128-bit encryption, enter a 26-digit hexadecimal number. A hexadecimal number uses the characters 0-9, a-f, or A-F.

3. Click the **Submit** button.

Additional Settings

The Additional Settings panel allows you to customize wireless settings. In general, it is recommended that you leave the default settings in place; however, if you are experiencing connection or performance difficulties, altering these settings may improve performance.

Note: Because the fields that display are dependent on the type of wireless adapter you are using, some of these settings may not display.

- **Wireless Mode.** Allows you to force the gateway to use 802.11b/g, 802.11b-only, or 802.11g-only modes of operation.
- **DTIM Period (seconds).** Determines at which interval the access point will send its broadcast traffic. The default value is 1 second.
- **Power Setting.** Allows you to select the power level for your wireless connection. The default list is 1 to 4; additional options may appear based on the service provider's configuration.
- **Maximum Connection Rate.** The maximum rate at which your wireless connection works (1, 2, 5.5, 11, or 22 Mbps for 802.11b-based models; 1, 2, 5.5, 11, 6, 9, 12, 24, 36, 48, or 54 Mbps for 802.11b/g-based models).

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Local Network - Configuration Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Local Network - Configuration page allows you to change the gateway's default local network settings. You must click the **Submit** button for changes to take effect.

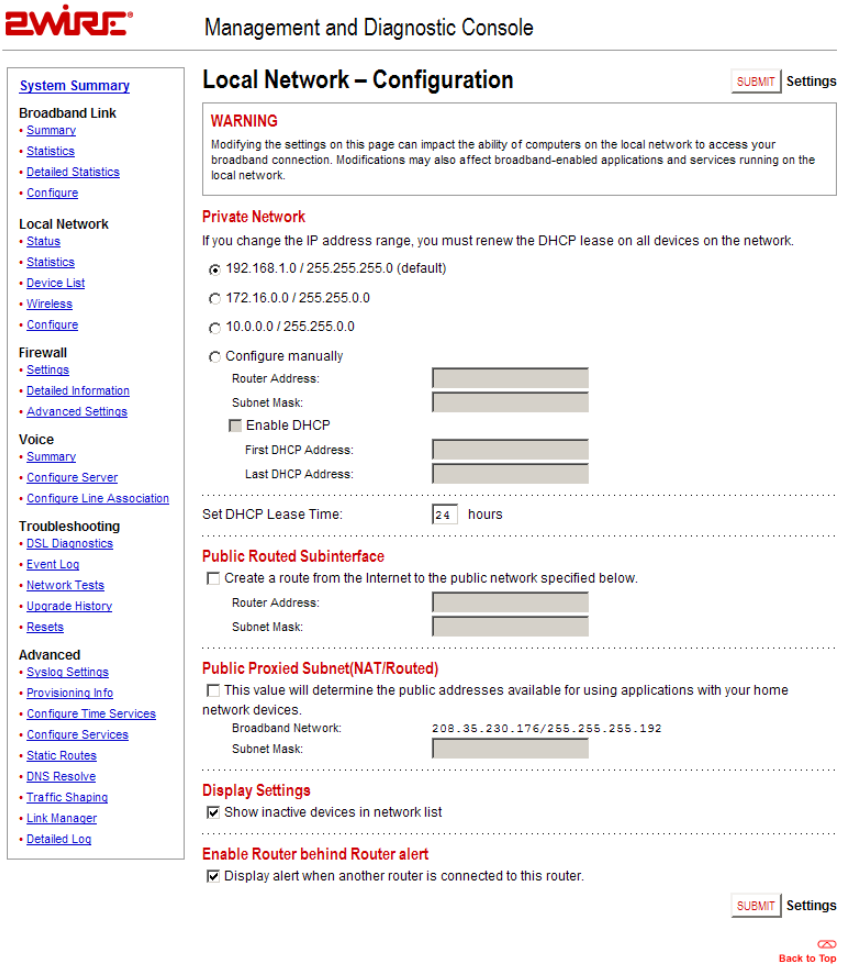

Figure 33. MDC Local Network Configuration Page

Private Network Settings

By default, the gateway uses the 192.168.0.1/255.255.0.0 IP address range. The Private Network pane allows you to change the IP address range used by the local network. You can choose from three standard configuration options, or configure the network settings manually.

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Note: If you change the local network IP address range, you must renew the DHCP lease on all devices on the gateway's local network and manually reconfigure all devices configured with static IP addresses.

Public Routed Subinterface Settings

The Public Routed Subinterface pane allows you to create a local network that has broadband network-accessible IP addresses by creating a route from the Internet to the public network specified. The public network operates without the use of Network Address Translation (NAT). This feature is typically used in conjunction with broadband service that provides a range of available IP addresses. Once enabled, the public IP addresses can be assigned to local computers.

Public Proxied Subnet Settings

The Public Proxied Subnet pane allows you to create a local network that has broadband-accessible IP addresses. Public Proxied Subnet is a public network in which the local network is an extension of the broadband network and does not require any special routing. Computers that are assigned Public Proxied Subnet IP addresses operate without the use of Network Address Translation (NAT). This feature is typically used in conjunction with broadband service that provides a range of IP addresses. Once enabled, the Public Proxied Subnet IP addresses can be assigned to local computers.

Display Settings

If the **Show Inactive Devices** checkbox is checked, devices that are no longer on the local network will display in the Local Network Local Devices list as an inactive device. If this checkbox is not checked, inactive devices will not be displayed in the device list.

Enable Router Behind Router Alert

If the **Display alert when another router is connected to this router** checkbox is checked, the Router Behind Router error page displays in the gateway user interface if the gateway detects the presence of a third-party router. If a third-party router is connected to the 2Wire gateway, the network can become unstable because both devices are trying to manage private IPs via NAT.

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Firewall - Settings Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Firewall - Settings page allows you to configure the firewall to pass through specific application data to a selected computer.

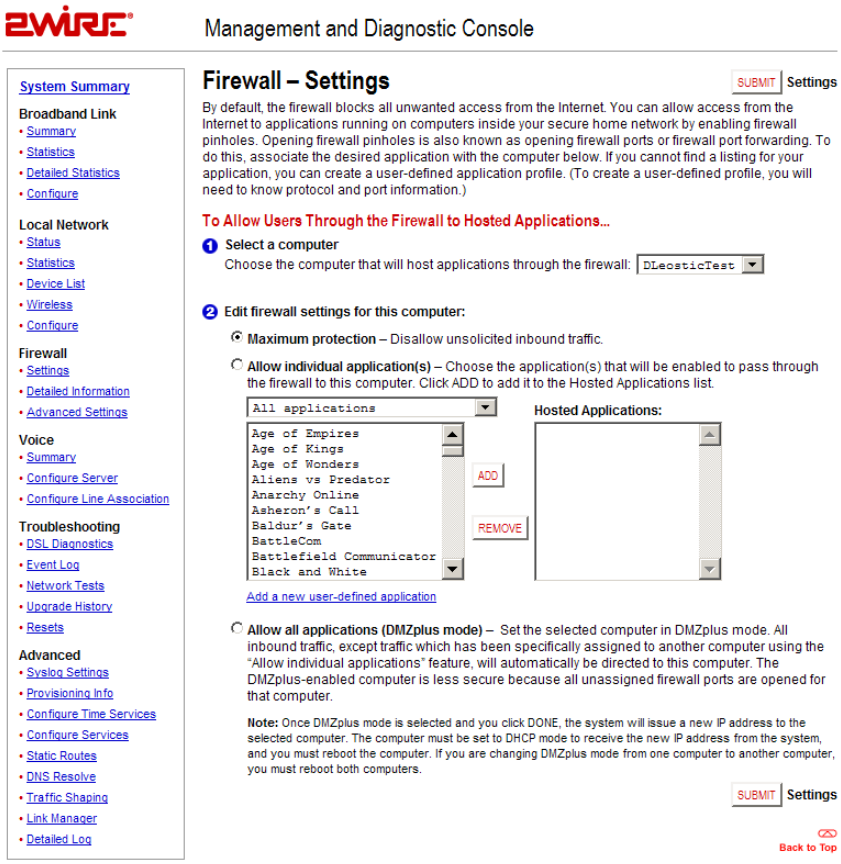
2WIRE
Management and Diagnostic Console
System Summary
Broadband Link
• Summary
• Statistics
• Detailed Statistics
• Configure
Local Network
• Status
• Statistics
• Device List
• Wireless
• Configure
Firewall
• Settings
• Detailed Information
• Advanced Settings
Voice
• Summary
• Configure Server
• Configure Line Association
Troubleshooting
• DSL Diagnostics
• Event Log
• Network Tests
• Upgrade History
• Resets
Advanced
• Syslog Settings
• Provisioning Info
• Configure Time Services
• Configure Services
• Static Routes
• DNS Resolve
• Traffic Shaping
• Link Manager
• Detailed Log
Firewall – Settings
SUBMIT Settings
By default, the firewall blocks all unwanted access from the Internet. You can allow access from the Internet to applications running on computers inside your secure home network by enabling firewall pinholes. Opening firewall pinholes is also known as opening firewall ports or firewall port forwarding. To do this, associate the desired application with the computer below. If you cannot find a listing for your application, you can create a user-defined application profile. (To create a user-defined profile, you will need to know protocol and port information.)
To Allow Users Through the Firewall to Hosted Applications...
1 Select a computer
Choose the computer that will host applications through the firewall: DLeosticTest
2 Edit firewall settings for this computer:
Maximum protection – Disallow unsolicited inbound traffic.
Allow individual application(s) – Choose the application(s) that will be enabled to pass through the firewall to this computer. Click ADD to add it to the Hosted Applications list.
All applications
Age of Empires
Age of Kings
Age of Wonders
Aliens vs Predator
Anarchy Online
Asheron's Call
Baldur's Gate
BattleCom
Battlefield Communicator
Black and White
ADD
REMOVE
Hosted Applications:
Add a new user-defined application
Allow all applications (DMZplus mode) – Set the selected computer in DMZplus mode. All inbound traffic, except traffic which has been specifically assigned to another computer using the "Allow individual applications" feature, will automatically be directed to this computer. The DMZplus-enabled computer is less secure because all unassigned firewall ports are opened for that computer.
Note: Once DMZplus mode is selected and you click DONE, the system will issue a new IP address to the selected computer. The computer must be set to DHCP mode to receive the new IP address from the system, and you must reboot the computer. If you are changing DMZplus mode from one computer to another computer, you must reboot both computers.
SUBMIT Settings
Back to Top

Figure 35. MDC Firewall Settings Page

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Hosting an Application

To host an application on the gateway's network for Internet users to access (such as a Web server), the firewall must be configured to allow users on the Internet to access it.

To host an application:

1. From **1 Select a computer**, select a computer from the pull-down menu.
2. From **2 Edit firewall settings for this computer**, click the **Allow individual application(s)** radio button.
3. From the Applications list, select an application profile.
4. Click the **ADD >** button. The application displays in the Hosted Applications list.
5. Click the **Submit** button.

To stop an application that is routed to a selected computer:

1. From the Hosted Applications list, select the application profile name.
2. Click the **< REMOVE** button.

Note: If an application does not appear in the Applications list, the list may need updating. If an update is available, click the **UPDATE APPLICATION LIST** button.

Creating an Application Profile

If the application that the user wishes to host is not included in the updated application list, you may need to create an application profile. An application profile configures the system's firewall to pass through application-specific data.

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To create an application profile:

1. Click the Add a new user-defined application link. The Edit Application page opens.

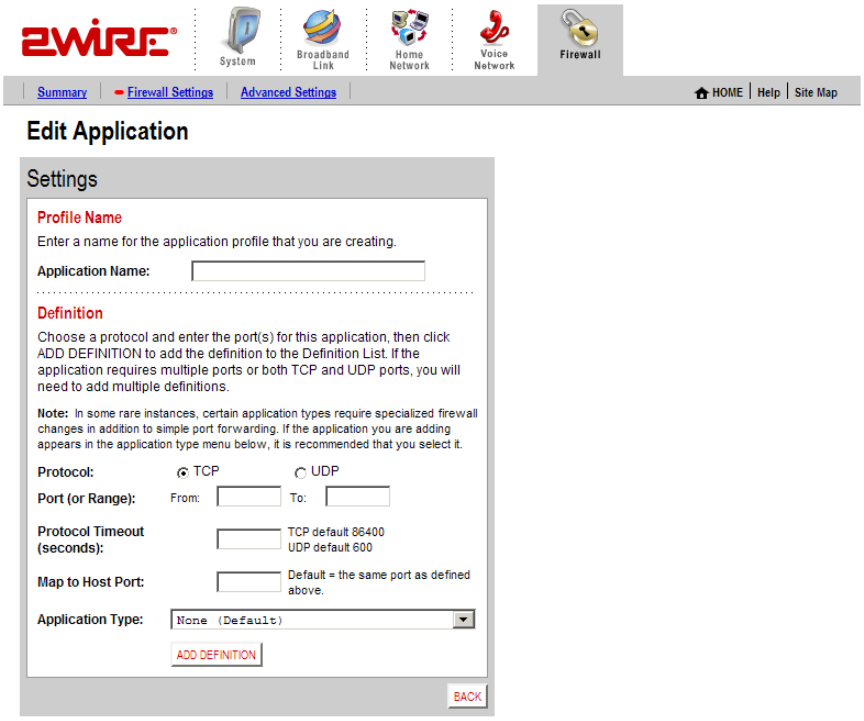
2WIRE
System
Broadband Link
Home Network
Voice Network
Firewall
Summary
Firewall Settings
Advanced Settings
HOME
Help
Site Map
Edit Application
Settings
Profile Name
Enter a name for the application profile that you are creating.
Application Name:
Definition
Choose a protocol and enter the port(s) for this application, then click ADD DEFINITION to add the definition to the Definition List. If the application requires multiple ports or both TCP and UDP ports, you will need to add multiple definitions.
Note: In some rare instances, certain application types require specialized firewall changes in addition to simple port forwarding. If the application you are adding appears in the application type menu below, it is recommended that you select it.
Protocol:
TCP
UDP
Port (or Range):
From:
To:
Protocol Timeout (seconds):
TCP default 86400
UDP default 600
Map to Host Port:
Default = the same port as defined above.
Application Type:
None (Default)
ADD DEFINITION
BACK

Figure 36. MDC Firewall Edit Application Page

2. In the Application Name field, enter a name for the application profile.
3. In the Protocol field, click the **TCP** or **UDP** radio button. If both protocols are required, you must create a definition for each.
4. In the Port (or Range) field, enter the port or port range used by the application.
5. In the Protocol Timeout (seconds) field, enter the amount of time (in seconds) that the connection in the specified range should remain open when there is no data transfer. In most cases the default value is appropriate.
6. In the Map to Host Port field, enter the value that provides the mapping offset to the local computer. For example, if this value is set to 4000 and the range being opened is 100 to 108, the forwarded data to the first value in the range will be sent to 4000. Subsequent ports will be mapped accordingly; 101 will be sent to 4001, 102 will be sent to 4002, etc.
7. From the Application Type pull-down menu, select the application type: None (Default), File Transfer Protocol (FTP), Microsoft Games, H.323-based Internet telephony, IRC (Internet relay chat) server, or PPTP virtual private network server.
8. Click the **Add Definition** button.
9. Repeat the previous step for each port or range of ports required for the application profile.

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Allowing all applications

DMZplus is used for hosting applications if an application will not operate properly using the “Allow individual application(s)” option. When in DMZplus mode, the designated computer:

- Shares the gateway’s IP address.
- Appears as if it is directly connected to the Internet.
- Has all of the unassigned TCP and UDP ports opened and pointed to it.
- Can receive unsolicited network traffic from the Internet.

To configure a computer on the user’s network for DMZplus mode:

1. Select the computer to which the user wishes to have all data sent.
2. Click the **Allow all applications (DMZplus mode)** radio button.
3. Click **Submit**.
4. Access the selected computer.
5. Confirm that the computer is configured for DHCP. If it is not, configure it for DHCP.
6. Restart the computer.

When the computer restarts, it receives a special IP address from the system and all unassigned TCP and UDP ports are forwarded to it.

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Firewall - Detailed Information Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Firewall - Detailed Information page shows detailed information about the gateway's firewall.

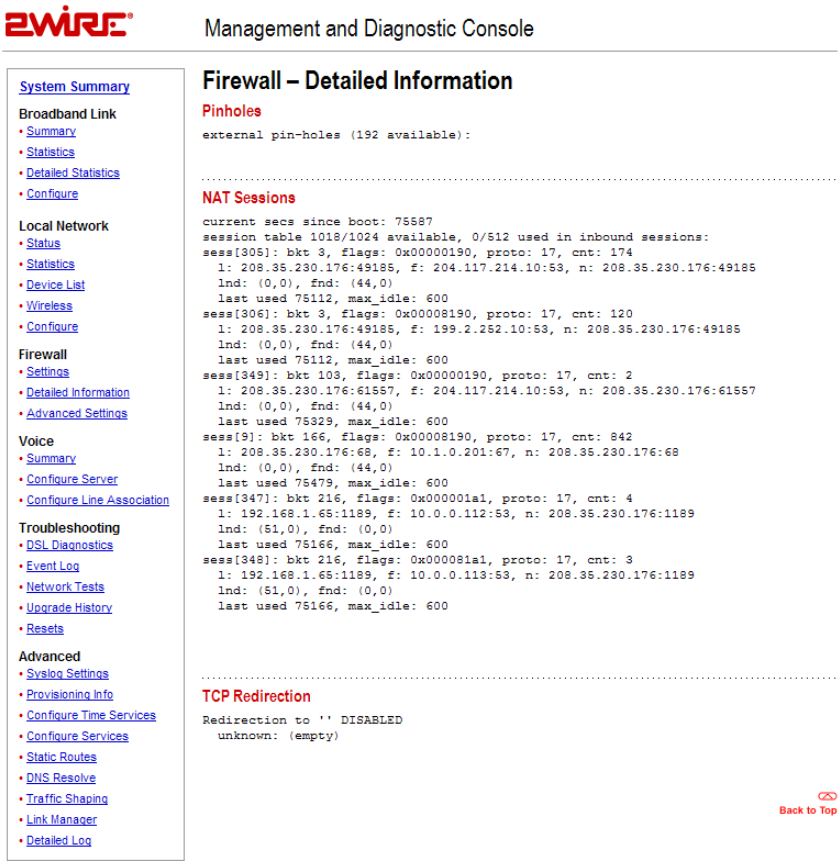

Figure 37. MDC Firewall Detailed Information Page

Pinholes

A pinhole is a configuration setting in the firewall that allows access to specific services running on the network. For example, for users outside the network to access a specific application (such as a game), a pinhole must be opened on the gateway firewall to allow requests to the application.

The Pinholes pane shows the number of pinholes that are currently open. There are 192 pinholes available.

NAT Sessions

The NAT Sessions pane shows the number of NAT sessions currently running.

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Firewall - Advanced Settings Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Firewall - Advanced Settings page allows you to configure the gateway's firewall.

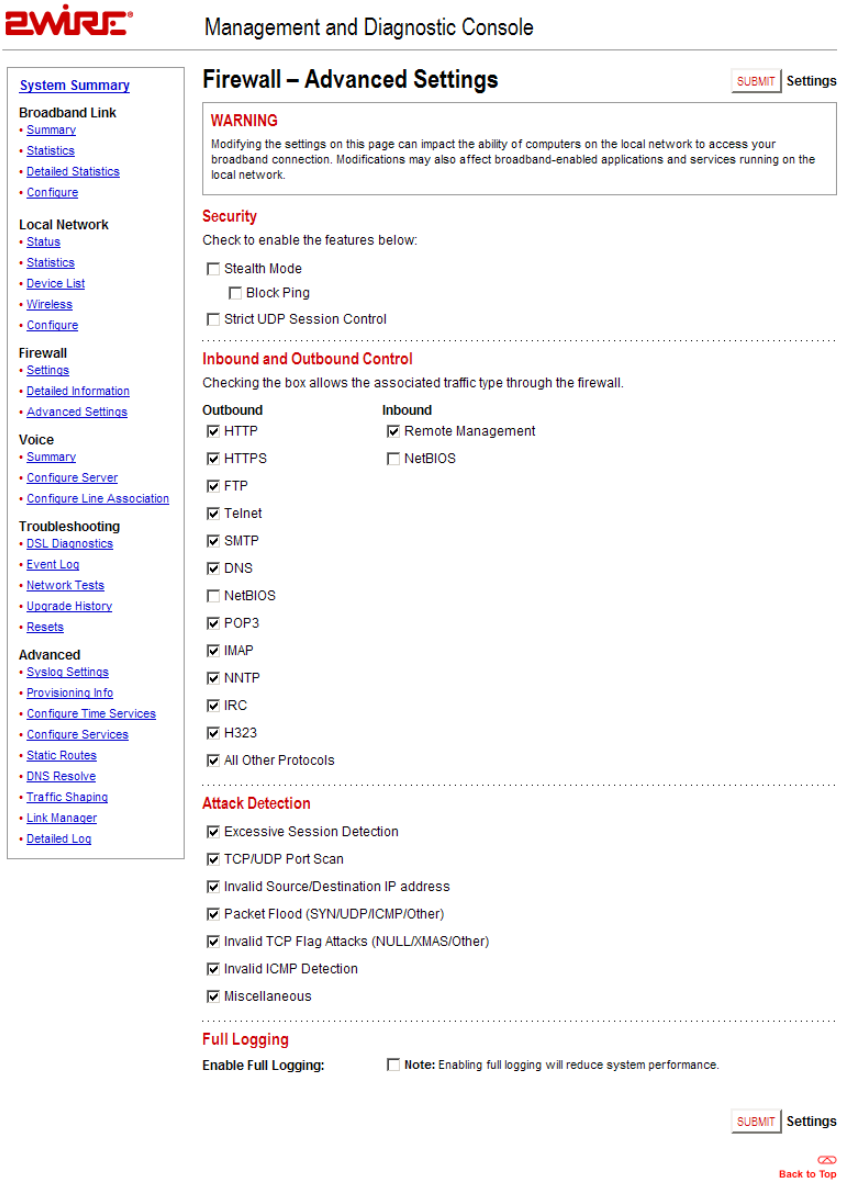

Figure 38. MDC Firewall Advanced Settings Page

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Enabling Security Features

The Security pane allows you to configure the gateway's firewall to provide additional security features. Following are descriptions of the features.

Stealth Mode. Enabling Stealth Mode suppresses error responses (for example, TCP resets).

Block Ping. Enabling Block Ping blocks ping responses.

Strict UDP Session Control. Enabling Strict UDP Session Control prevents another source from "piggybacking" onto a UDP session.

Controlling Inbound and Outbound Traffic

If an Inbound box is checked, the firewall allows the corresponding protocol to pass through from the Internet to the network. If an Outbound box is checked, the firewall allows the traffic from the network to pass through the firewall to the Internet. You must click the **Submit** button for changes to take effect.

Note: Allowing inbound traffic does not mean that the firewall automatically allows this type of traffic to pass through the firewall to the network. Even if a particular protocol/application type is allowed, the firewall still checks and blocks all unsolicited traffic from the Internet unless the firewall is configured to allow the traffic through using an application profile.

Disabling Attack Detection

By default, the 2Wire gateway firewall rules block the attack types listed in the Attack Detection pane. Some hosted applications require that the user open specific ports (for example, TCP or UDP) to allow outside users to access their network. The Attack Detection pane allows you to configure the gateway's firewall rules to allow traffic through on the specified ports.

To disable attack detection for a specific port, deselect the corresponding checkbox and click the **Submit** button.

Enabling Full Logging

To log all packets, check the **Enable Full Logging** checkbox.

Note: When full logging is enabled, the gateway logs every packet. This will significantly reduce overall system performance because the log buffer capacity will be reached more quickly.

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Voice Server - Summary Page

Note: This link is present only if the 2Wire gateway is VoIP-enabled.

The Voice Server - Summary page shows summary information about the voice line(s) and their profile mappings.

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Voice - Configure Server Page

Note: This link is present only if the 2Wire gateway is VoIP-enabled.

The Voice - Configure Server page allows you to edit a profile that is associated with your VoIP services, and is used primarily for test purposes.

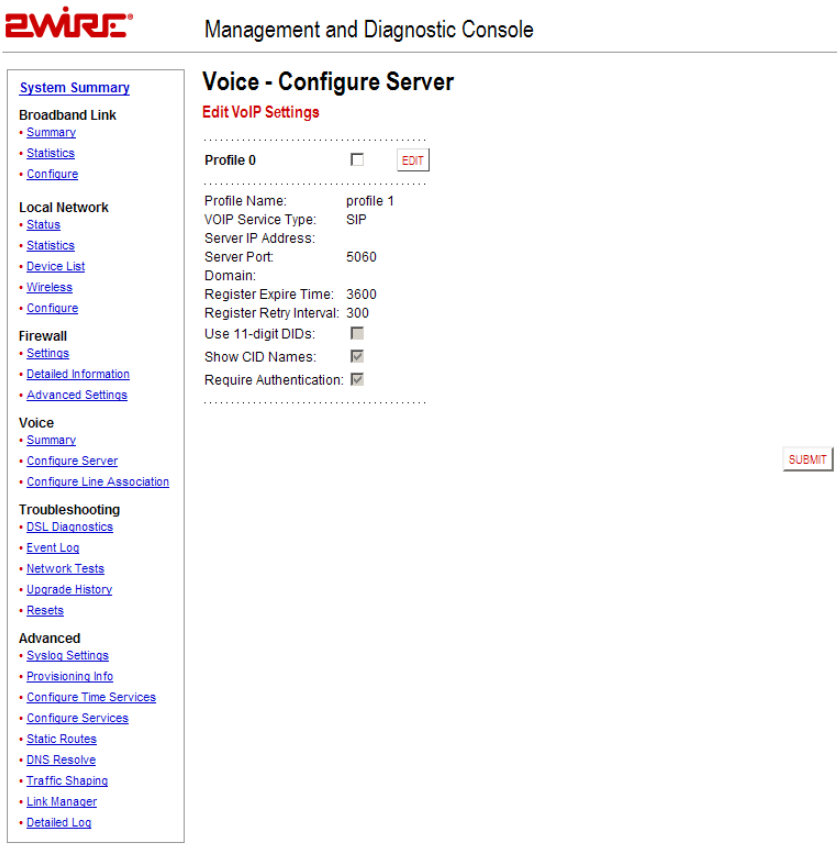

Figure 39. MDC Voice Configure Server Page

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The Edit VoIP Settings panel displays the current SIP settings, and allows you to edit the settings. The following table describes the fields.

Server	
IP Address	Corresponds to the SIP proxy address.
Port	Corresponds to the SIP proxy destination port.
Number of Lines	Displays the number of lines allowed on the gateway.
End Point	
Domain	Displays the IP domain of the SIP endpoint.
Register Expire Time	Displays the default expiration (in seconds) of the SIP registration, and indicates how frequently re-registration will occur.
Register Retry Interval	Indicates the period of time (in seconds) before the gateway will retry registration after a failed attempt.

By default, the **Show CID Names** and **Require Authentication** checkboxes are checked. **Show CID Names** allows the gateway to display the configured outbound caller ID information. **Require Authentication** allows the gateway to use authentication when registering with the SIP proxy. **Use 11-digit DIDs** allows the gateway to automatically append a “1” to the registration phone number.

1. To add a new profile, choose the VoIP type from the pull-down menu and click **ADD**. To edit VoIP settings, click the box next to the profile name and click **EDIT**. To delete a profile, click the box next to the profile and click **DELETE**.
2. If editing a profile, the **Edit Profile Settings** page opens.
3. Enter a name in the Profile Name field, then enter values in the Server Settings fields as well as the fields for End Point Settings. Check the appropriate boxes for 11-digit DIDs, CID names, and authentication.
4. Click **SUBMIT**.

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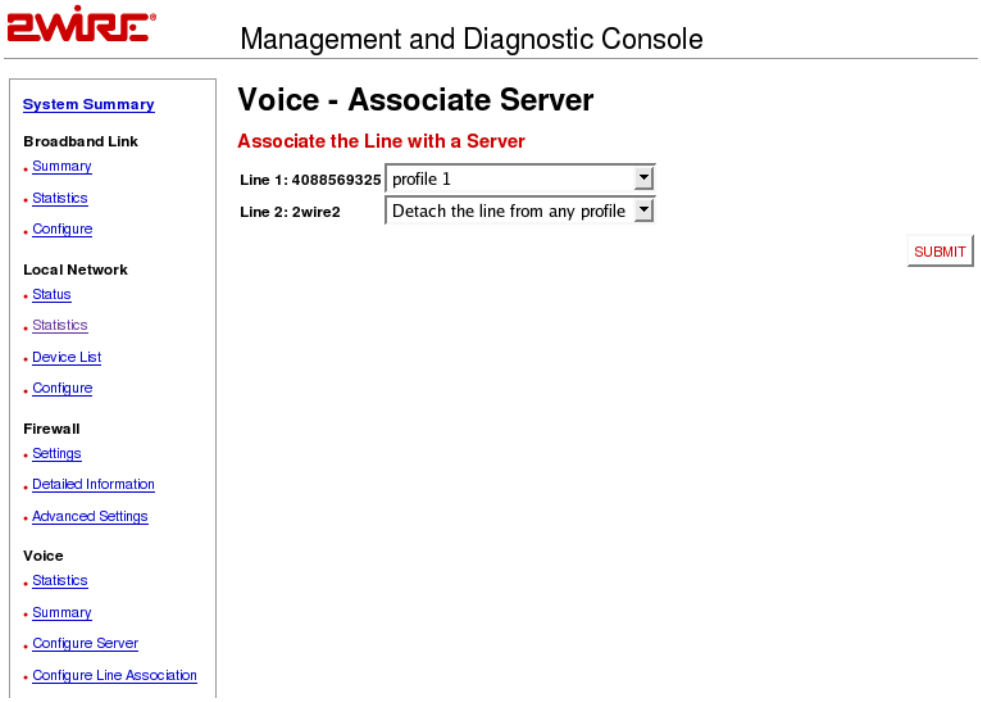
5. From the left navigation field under the Voice subheading, click **Configure Line Association**. The **Voice - Associate Server** page opens.



6. Choose a line and associate it with a server from the pull-down menu. If applicable, repeat the process with another VoIP line. Click **SUBMIT**.

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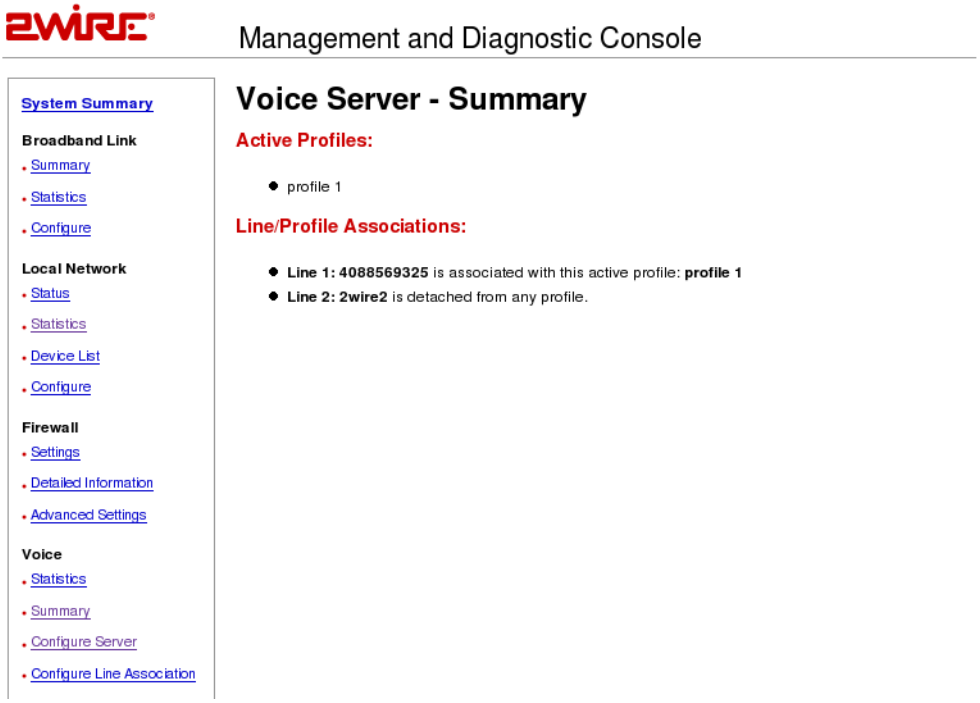
7. The **Voice Server - Summary** page displays. Active profiles are listed, as are Line/Profile associations. To make any changes, return to the previous step.



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Troubleshooting - DSL Diagnostics Page

The Troubleshooting - DSL Diagnostics page displays data associated with the 2Wire gateway's DSL link.

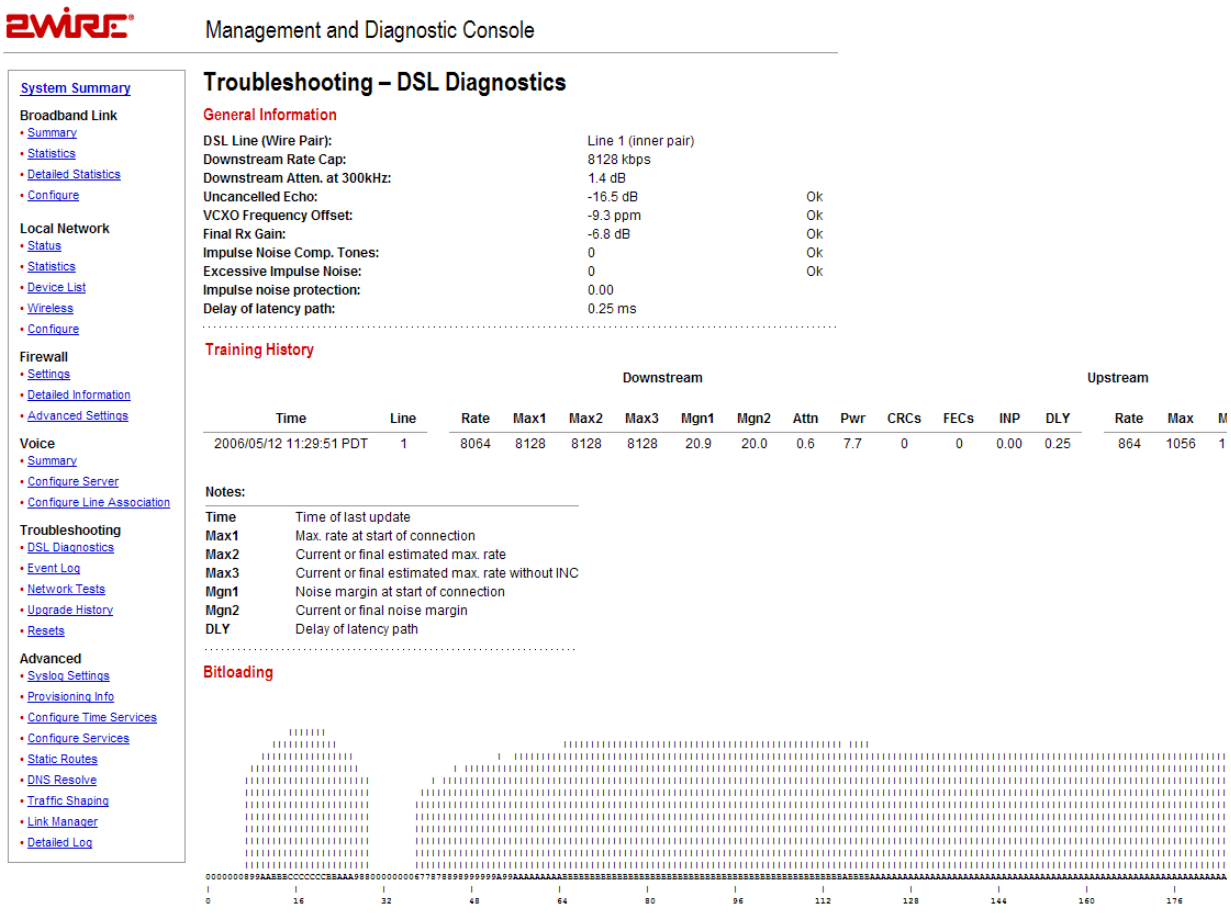
Management and Diagnostic Console
System Summary
Broadband Link
• Summary
• Statistics
• Detailed Statistics
• Configure
Local Network
• Status
• Statistics
• Device List
• Wireless
• Configure
Firewall
• Settings
• Detailed Information
• Advanced Settings
Voice
• Summary
• Configure Server
• Configure Line Association
Troubleshooting
• DSL Diagnostics
• Event Log
• Network Tests
• Upgrade History
• Resets
Advanced
• Syslog Settings
• Provisioning Info
• Configure Time Services
• Configure Services
• Static Routes
• DNS Resolve
• Traffic Shaping
• Link Manager
• Detailed Log
Troubleshooting – DSL Diagnostics
General Information
DSL Line (Wire Pair): Line 1 (inner pair)
Downstream Rate Cap: 8128 kbps
Downstream Atten. at 300kHz: 1.4 dB
Uncancelled Echo: -16.5 dB Ok
VCXO Frequency Offset: -9.3 ppm Ok
Final Rx Gain: -6.8 dB Ok
Impulse Noise Comp. Tones: 0 Ok
Excessive Impulse Noise: 0 Ok
Impulse noise protection: 0.00
Delay of latency path: 0.25 ms
Training History
Downstream
Upstream
Time Line Rate Max1 Max2 Max3 Mgn1 Mgn2 Attn Pwr CRCs FECs INP DLY Rate Max M
2006/05/12 11:29:51 PDT 1 8064 8128 8128 8128 20.9 20.0 0.6 7.7 0 0 0.00 0.25 864 1056 1
Notes:
Time Time of last update
Max1 Max. rate at start of connection
Max2 Current or final estimated max. rate
Max3 Current or final estimated max. rate without INC
Mgn1 Noise margin at start of connection
Mgn2 Current or final noise margin
DLY Delay of latency path
Bitloading
0 16 32 48 64 80 96 112 128 144 160 176

Figure 40. MDC Troubleshooting DSL Diagnostics Page

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Analyzing General Information

The General Information pane shows diagnostic information for the current DSL connection (or connection attempt). These values are also listed in the last row of the Training History pane.

Item	Description	Value	Comment
DSLAM	Lists information about the DSLAM, including country, DSLAM vendor, and specifics.		
DSL Line	During line search, the value will alternate between 1 and 2. The "Searching for DSL signal" comment appears until the ADSL protocol is confirmed with the DSLAM on the current line.	1 or 2.	**None** or **Searching for DSL signal**.
Downstream Rate Cap	The configured DSL service downstream speed.	Varies by service provider.	
Downstream Atten. at 300kHz	The measurement (in kbps) of the decrease in downstream signal strength.	Varies by service provider.	
Uncancelled Echo	Measure (in dB) of the uncancelled echo relative to the background noise on the line, indicating how much the uncancelled echo is affecting DSL performance.	Appropriate values usually range between -25dB and -6dB. A positive value (for example, +12) could indicate the presence of an unfiltered telephony device and/or an alarm.	**Ok** or **Suspicious - check phone filters and alarm**.
VCXO Frequency Offset	Indicates the difference between the gateway's and the DSLAM port's crystal frequency in parts per million (ppm).	The ideal value is zero (0). The maximum difference should be less than 150 ppm.	**Ok** or **Suspicious - hardware frequency mismatch**.
Final Rx Gain	Indicates the current receive gain setting (in dB).	Dependent on DSL line length.	**Ok** or **Suspicious - possible saturation**.

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Item	Description	Value	Comment
Impulse Noise Comp. Tones	Indicates the number of compensation tones on which impulse noise is detected. For non-interleaved lines with impulse noise, the connect rate will be lowered to avoid excessive errors on the line; however, impulse noise may vary with time, so connect rates may vary accordingly. Impulse Noise Compensation is currently disabled for interleaved lines.	The ideal value is zero (0).	**Ok** or **Suspicious - Impulse noise detected**.
Excessive Impulse Noise	Indicates to what degree impulse noise is present on the line.	The ideal value is zero (0).	
Impulse noise protection	Measurement of how much impulse noise can be mitigated. Dependent on the current line configuration.		
Delay of latency path	Measurement of how much delay is introduced. Dependent on the current line configuration.		

Reviewing Training History

The Training History pane provides a record of the last 20 connection attempts. The current connection or connection attempt is displayed in the last row.

Item	Description
Time	Initially this field will display the time (since power on) in DAYS HH:MM:SS format, until the gateway can access the Internet and retrieve the current local time. Subsequently the time (since power on) is displayed in YY:MM:DD and HH:MM:SS format.
Line	The line (1 or 2) on which the gateway is searching for a DSL signal.
Downstream	
Rate	The net user data rate (in kbps) for the connection.
Max 1	Maximum rate achievable at the time of the initial connection based on the line quality (specifically, the uncapped rate).

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Item	Description
Max 2	Latest estimate of maximum achievable rate adjusted for changing line conditions.
Max 3	Current or final estimated maximum achievable rate without impulse noise compensation.
Mgn 1	Noise margin (in dB) at the start of the connection.
Mgn 2	Latest noise margin adjusted for changing line conditions since the connection was first established.
Attn	Measured attenuation (in dB) of the line.
Pwr	Transmit power (in dB).
CRCs	Total uncorrected errors for this connection.
FECs	Total corrected errors for this connection.
INP	Impulse noise protection.
DLY	Delay of latency path.
Upstream	
Rate	The new user data rate (in kbps) for the connection.
Max	Maximum rate achievable at the time of the initial connection based on the line quality (specifically, the uncapped rate).
Mgn	Noise margin (in dB) at the start of the connection.
Attn	Measured attenuation (in dB) of the line.
Pwr	Transmit power (in dB).
CRCs	Total uncorrected errors for this connection.
FECs	Total corrected errors for this connection.
Mode	The DSL mode used (G.DMT, T1.413, or G.LITE).
Vendor	Vendor ID of the DSLAM (for example, ALCB indicates Alcatel DSLAM in G.DMT mode).
State	The internal state of the modem. If there are repeated connection problems, technical support representatives can use this information to determine at what point during training the modem failed, or whether the modem is repeatedly failing at the same point.

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Item	Description
Exit Code	Indicates the reason for a lost connection or a terminated training attempt. Following are examples of the typical values that can be represented: ERR_LOF_LIMIT - Retrained due to loss of framing. ERR_LOS_LIMIT - Retrained due to loss of signal. ERR_HI_BER_LIMIT - Retrained due to excessive CRCs. RESTART - System deliberately restarted modem (line search, reprovisioning, or 30-second timeout when waiting for DSL signal. ERR_STATE_TIMEOUT - Modem timed out during training (for example, the modem failed to detect pilot signal at the appropriate time). ERR_ALL_OPTIONS_FAIL - Failed to negotiate a final bitrate with DSLAM. RETRAIN_HIGHER - Proactive retrain in order to obtain a significantly higher connect rate.
Echo	A measure of the uncancelled echo *relative* to the background noise on the line. This is an indication of how much the uncancelled echo is affecting DSL performance, rather than an absolute measure of the uncancelled echo.
VXCO	Indicates the difference between the gateway's and the DSLAM port's crystal frequency in parts per million (ppm).
Rx Gain	Indicates the current receive gain settings, which will depend on the length of the DSL line.
INC Tones	Indicates the number of compensation tones on which impulse noise is detected.

Reviewing Bitloading

The Bitloading pane shows the bits loaded per tone for the upstream (tones 6 to 31) and downstream (tones 32 to 255) spectrum. A single hex-digit for each tone shows the numeric values (0 to F) in addition to the bar-graph depiction.

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Troubleshooting - Event Log Page

The Troubleshooting – Event Log page displays all security related events for the broadband and local network. Log information is stored in an 8 KB buffer. When the buffer is full, the oldest items are purged from the log. You can also clear the log contents by clicking the **Clear Log** button.

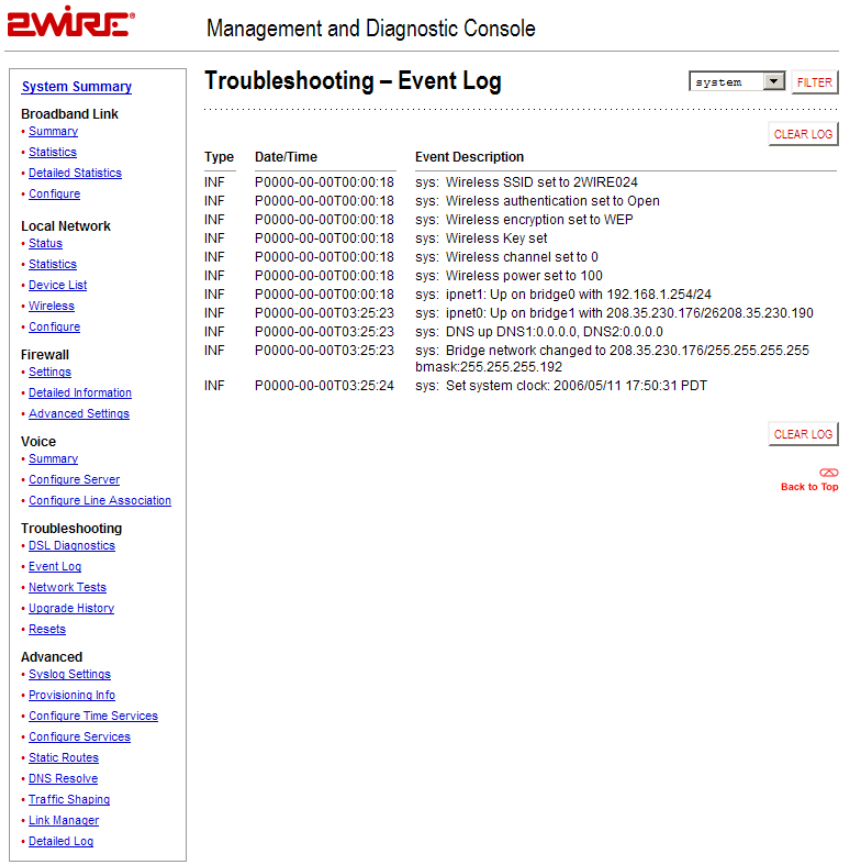

Figure 41. MDC Troubleshooting Event Log Page

You can view specific information by selecting which log to view from the pull-down menu and then clicking the **Filter** button (the screen capture depicted above has the **system** filter applied). Following are descriptions of the logs.

- **Access.** Shows the current access log, which registers all significant Content Screening and Internet Access Control events.
- **All.** Shows all logs that register a significant event (access, firewall, fw alert, system, and wra).
- **Firewall.** Shows all detailed firewall events, including Internet Access Control and Firewall Monitor.
- **FW Alert.** Shows the current Firewall Monitor log, which registers all significant Firewall Monitor-related events.

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- **HURL.** Shows the Broadband Redirect messages that have been enabled by a service provider.
- **Modem.** Shows the current modem log, which registers all significant modem-related events.
- **System.** Shows the current system log, which registers all significant events within the 2Wire gateway since it was last restarted.
- **WRA.** Shows the current Web Remote Access log, which registers all significant Web Remote Access-related events.

Each log entry includes the severity level, a description of the event, and the actual time that it occurred. The most recent events display at the *bottom* of the list.

Events generate an Informational (INF) or Warning (WRN) severity level. Informational indicates events that are informational only; Warning indicates an unexpected condition that does not affect the 2Wire gateway's ability to operate (for example, a network problem or the 2Wire gateway is not configured properly).

For events that involve the transfer of packets, the following additional information is displayed.

Item	Description
src	Source IP address
dst	Destination IP address
ipprot	Protocol number as indicated in the IP header field
sport	Source port (TCP and UDP)
dport	Destination port (TCP and UDP)
Disposition of the event	The action taken when the event occurs (for example, "Unknown inbound session stopped")

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Troubleshooting - Network Tests Page

The Troubleshooting – Network Tests page provides the Ping, Traceroute, and DNS Query tools, which help diagnose problems with the 2Wire gateway or 2Wire gateway connections.

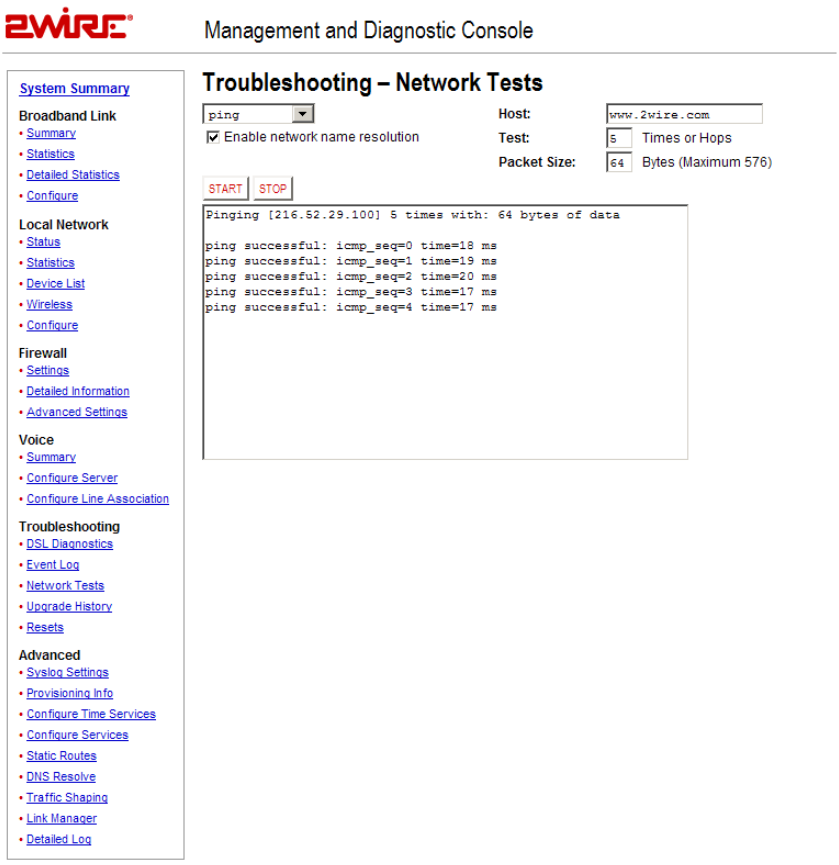

Figure 42. MDC Troubleshooting Network Tests Page

The Ping test allows you to ensure that the 2Wire gateway can send data packets to (ping) a remote host. The Traceroute test traces the number of times a data packet sent from the 2Wire gateway is routed before it reaches its destination. The DNS Query test finds the IP address of the domain name service.

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To perform a ping or traceroute test:

1. From the drop-down menu, select Ping or Traceroute.
2. In the Host field, enter the URL of the host location to which you wish the 2Wire gateway to send the ping or traceroute.
3. In the Test field, enter the number of times you want the ping to occur (the maximum is 25) or the number of hops you want traceroute to trace.
4. In the Packet Size field, enter the packet size you wish to send. The maximum packet size is 576.
5. Check the **Enable network name resolution** checkbox. This will ensure that the name of the host location is displayed along with the corresponding IP address.
6. Click the **Start** button.

The results are displayed on the page as they occur, and include round trip latency; the aggregate number of packets sent, received, and lost; and the minimum, maximum, and average round-trip latency.

To discontinue Ping or Traceroute, click the **Stop** button.

To perform a DNS query:

1. From the drop-down menu, select DNS Query.
2. In the Host field, enter the domain name (URL) for which you wish to obtain the IP address.
3. Click the **Start** button.

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Troubleshooting - Upgrade History Page

The Troubleshooting - Upgrade History page shows a log of all system software upgrades, and lists the upgrades in the order in which they occurred.

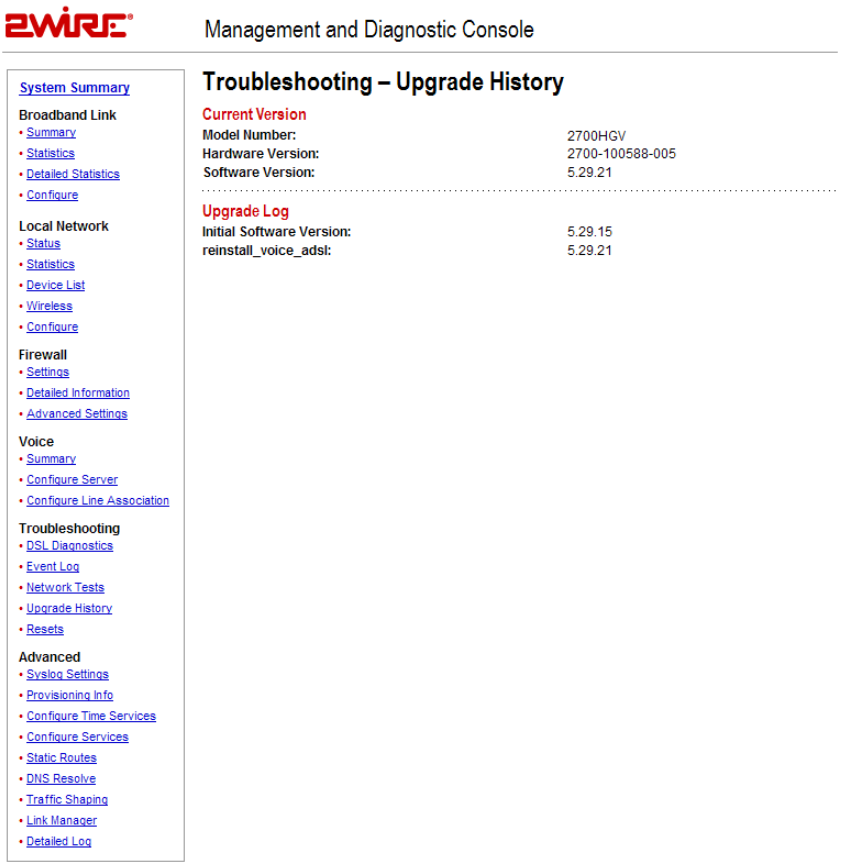

Figure 43. MDC Troubleshooting Upgrade History Page

The Upgrade History page shows the following information.

Item	Description
Model number	The 2Wire gateway model number.
Hardware version	The current 2Wire gateway hardware version.
Software version	The current 2Wire gateway software version.
Upgrade Log	The initial software version, and a record of the last 10 upgrades.

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Troubleshooting - Resets Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Troubleshooting – Resets page allows you to reset various components associated with the 2Wire gateway network.

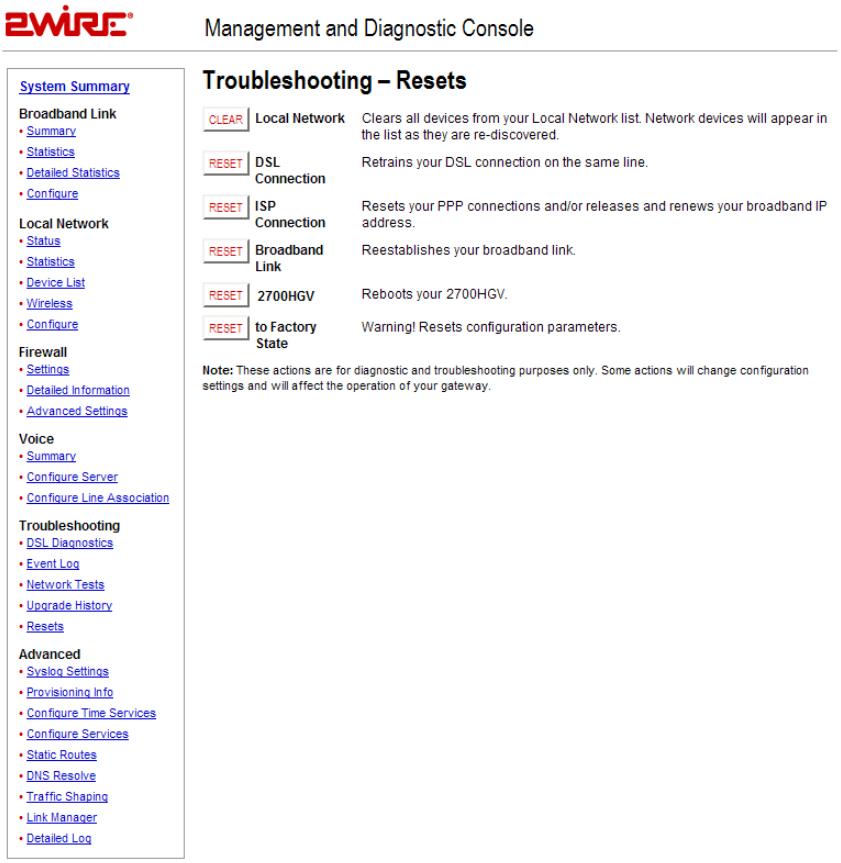
2WIRE
Management and Diagnostic Console
System Summary
Broadband Link
• Summary
• Statistics
• Detailed Statistics
• Configure
Local Network
• Status
• Statistics
• Device List
• Wireless
• Configure
Firewall
• Settings
• Detailed Information
• Advanced Settings
Voice
• Summary
• Configure Server
• Configure Line Association
Troubleshooting
• DSL Diagnostics
• Event Log
• Network Tests
• Upgrade History
• Resets
Advanced
• Syslog Settings
• Provisioning Info
• Configure Time Services
• Configure Services
• Static Routes
• DNS Resolve
• Traffic Shaping
• Link Manager
• Detailed Log
Troubleshooting – Resets
CLEAR Local Network Clears all devices from your Local Network list. Network devices will appear in the list as they are re-discovered.
RESET DSL Connection Retrains your DSL connection on the same line.
RESET ISP Connection Resets your PPP connections and/or releases and renews your broadband IP address.
RESET Broadband Link Reestablishes your broadband link.
RESET 2700HGV Reboots your 2700HGV.
RESET to Factory State Warning! Resets configuration parameters.
Note: These actions are for diagnostic and troubleshooting purposes only. Some actions will change configuration settings and will affect the operation of your gateway.

Figure 44. MDC Troubleshooting Resets Page

The **Clear** button in the Local Network field clears all devices from the Local Network list. Doing so will change the configuration settings, and may affect 2Wire gateway operation because it removes all devices (such as computers) from your network.

The **Reset** button in the DSL Connection field retrains the 2Wre gateway's DSL connection.

The **Reset** button in the ISP Connection field resets the PPP connection and/or releases and renews the broadband IP address.

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The **Reset** button in the Broadband Link field allows you to reset the 2Wire gateway broadband link. For 2Wire gateway models with a DSL connection, this means the DSL connection is reset.

The **Reset** button in the Gateway field allows you to restart the 2Wire gateway. During 2Wire gateway restart, the Troubleshooting page cannot be accessed until the 2Wire gateway completely restarts and the connection is reestablished.

The **Reset** button in the to Factory State field resets the 2Wire gateway to an unprovisioned default state. Doing so will remove all your configuration settings, and requires 2Wire gateway software reinstallation.

Warning: Resetting the 2Wire gateway to an unprovisioned default state will clear all update records from the Upgrade History page, and delete all provisioning, firewall, and Enhanced Services configuration settings.

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Advanced - Syslog Settings Page

The Advanced - Syslog Settings page allows users to maintain a history of security events greater than the capacity of the 2Wire gateway by enabling a syslog server.

Note: Use of this feature requires a UNIX or Linux computer running a syslog daemon.

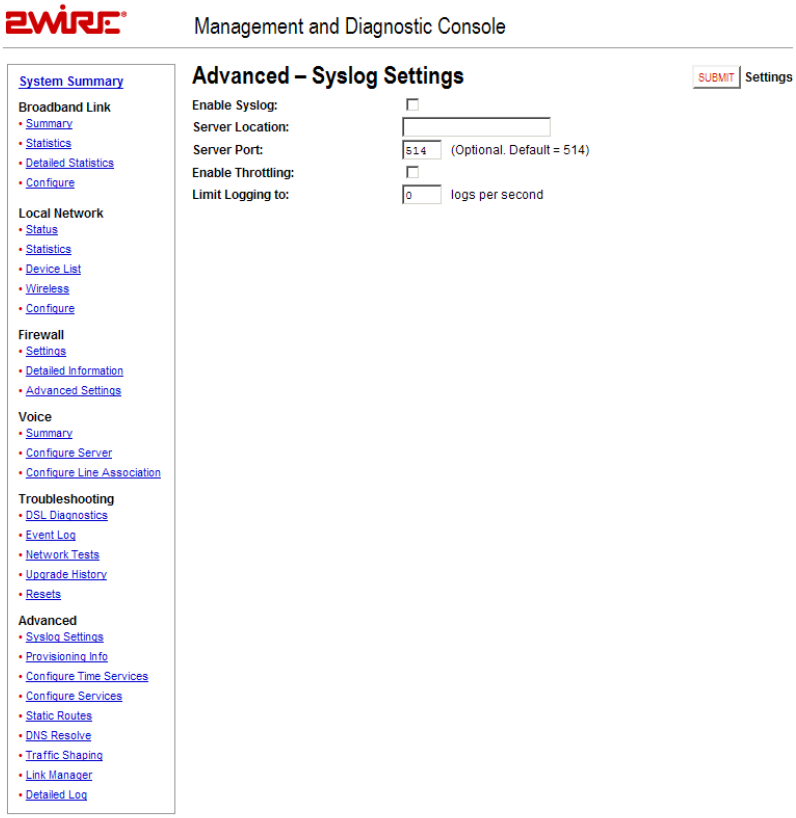

Figure 45. MDC Advanced Syslog Settings Page

To enable syslog and specify the location of a syslog server:

1. Check the **Enable Syslog** checkbox.
2. In the Server Location field, enter the IP address of a UNIX or Linux computer running a syslog daemon.
3. *Optional:* In the Server Port field, enter the outbound port number upon which the syslog server is located.
4. To limit the number of log packets, check the **Enable Throttling** checkbox.
5. In the Limit Logging to field, enter the number of logs per second that you wish to log.
6. Click the **Submit** button.

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Advanced - Provisioning Info Page

The Advanced – Provisioning Info page displays the parameters with which the 2Wire gateway was provisioned.

Figure 46. MDC Advanced Provisioning Information Page

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The gateway provisioning parameters are dynamic, and vary depending on the software version that the gateway is running.

- Module Configuration. Configuration parameters for modules listed in the Advanced Link Manager States page. The parameters are set by broadband provisioning.
- UI Param Configuration. Configuration parameters that affect the user interface and user interaction. The parameters are set by broadband provisioning.
- Server Set Configuration. Configuration information defining how the gateway is connected to and interacts with backend provisioning.
- Firewall Configuration. Configuration information for the firewall.

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Advanced - Configure Time Services Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Advanced – Configure Time Services page allows you to view and change system time and date settings.

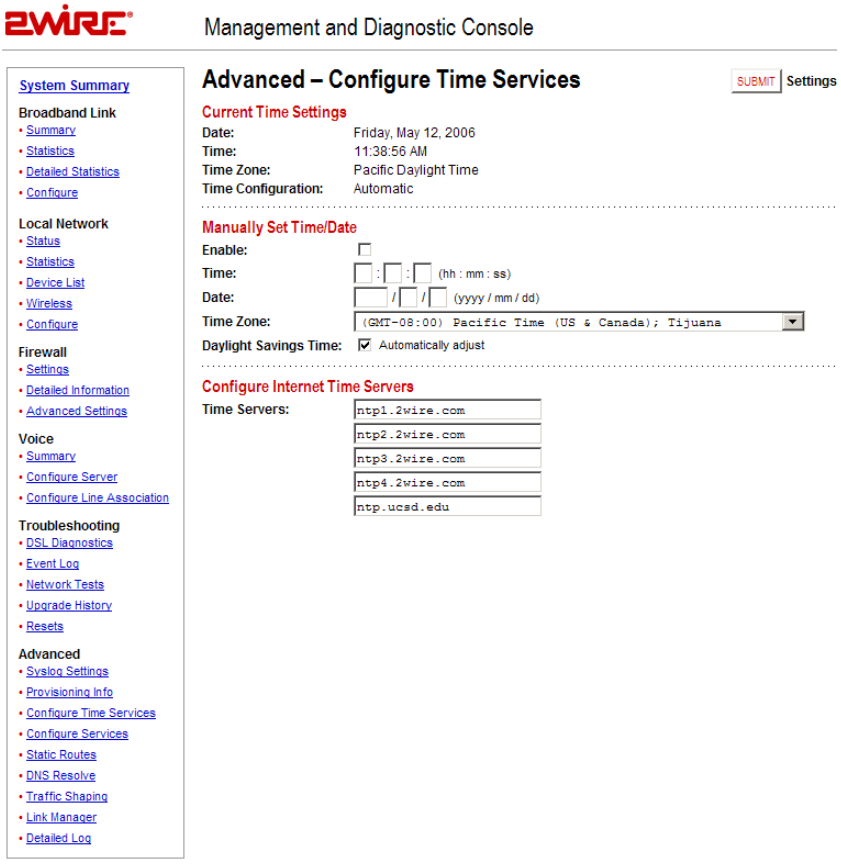

Figure 47. MDC Advanced Configure Time Services Page

During the 2Wire gateway setup process, you specify the time zone in which you are located so that the time and date are automatically displayed in the 2Wire gateway user interface. These time settings are displayed in the Current Time Settings panel, which shows the current date, time, time zone, and whether the time was automatically or manually configured. If you wish to manually set the time and date, you can do so in the Manually Set Time/Date panel.

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To manually set the time and date:

1. Check the **Enable** checkbox.
2. In the Time field, enter the time in 24-hour HH:MM:SS format (for example, 10:02:11).
3. In the Date field, enter the date in YYYY/MM/DD format (for example, 2006/10/09).
4. From the Time Zone pull-down menu, select the time zone. The available time zones are Hawaii, Alaska, Pacific, Mountain, Arizona, Central, Eastern, Indiana, and Atlantic (Canada).
5. Check the **Daylight Savings Time** checkbox if you wish to automatically adjust for daylight savings time.

You can also specify the time servers from which you wish to obtain system time by entering the time server Internet address in the Time Servers fields. These settings are typically provided by the service provider and/or backend management system.

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Advanced - Configure Services Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Advanced – Configure Services page allows you to enable the 2Wire gateway to operate in bridged mode, change the timeout settings for NAT, enable notification messages, enable the SIP ALG, and change the upstream maximum transmission rate.

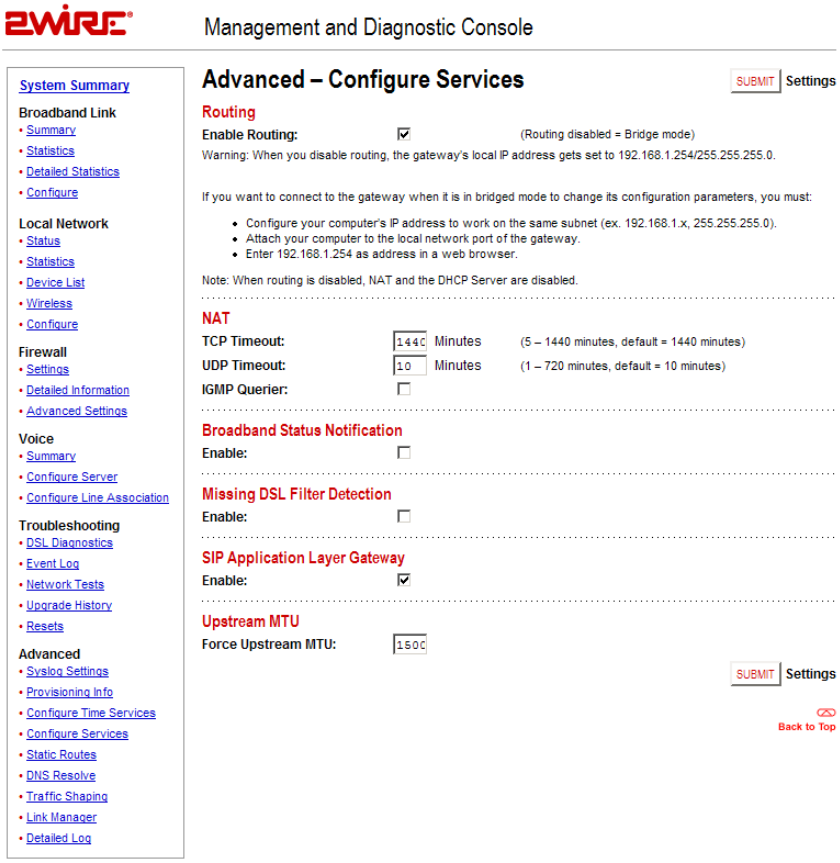

Figure 48. MDC Advanced Configure Services Page

Routing

By default, the 2Wire gateway is configured in routed mode. The Advanced – Configure Services page allows you to configure the 2Wire gateway to operate in bridged mode.

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IMPORTANT: Bridged mode is intended for testing purposes only, as in WT-062 (ADSL), BER (Bit Rate Error), or industry standard performance tests. When routed mode is disabled, the 2Wire gateway can no longer be managed via CMS, and any DSL connection will require an external PPP connection (via software of third-party hardware). It is strongly recommended that you disable routed mode ***ONLY*** if you thoroughly understand the ramifications of doing so.

To operate the gateway in bridged mode:

1. Deselect the **Enable Routing** checkbox.
2. Click the **Submit** button.

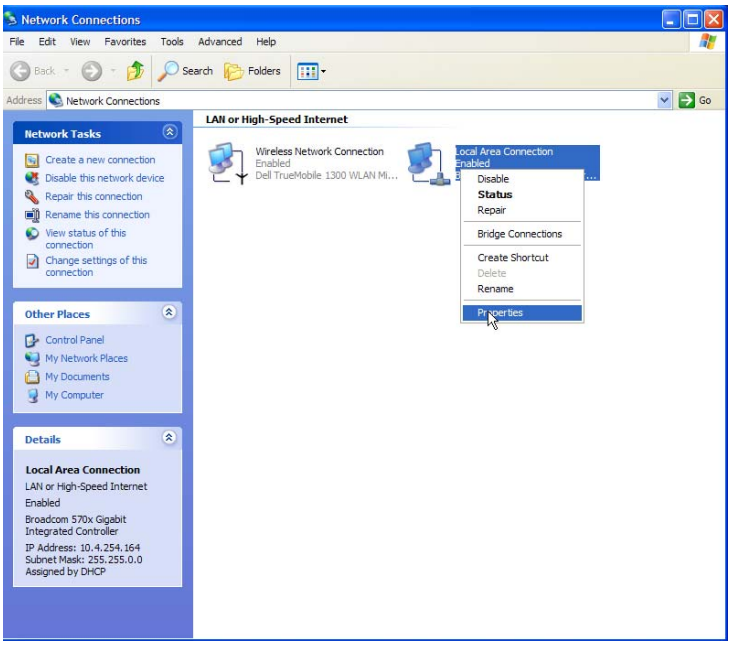
Most gateway features are now disabled, including firewall and stateful packet inspection, DHCP, NAT, DNS, PPP, and remote management. The gateway no longer functions as a gateway and is, in effect, a multi-protocol (Ethernet, wireless, and USB) bridge.

Note: When routing is disabled the gateway's local IP address is set to 172.16.0.1/16.

Computers connected to the 2Wire gateway will retain the IP address assigned by the gateway's DHCP server until a new IP address is obtained from an alternative DHCP server, or is manually assigned.

To re-enable routed mode:

1. Configure the computer's IP address to work on the same subnet as the gateway.
   a. From the Windows desktop or the Start menu, right-click the My Network Places icon, then left-click **Properties**.
   b. Right-click the icon that represents the network connection to the gateway, and left-click **Properties**.



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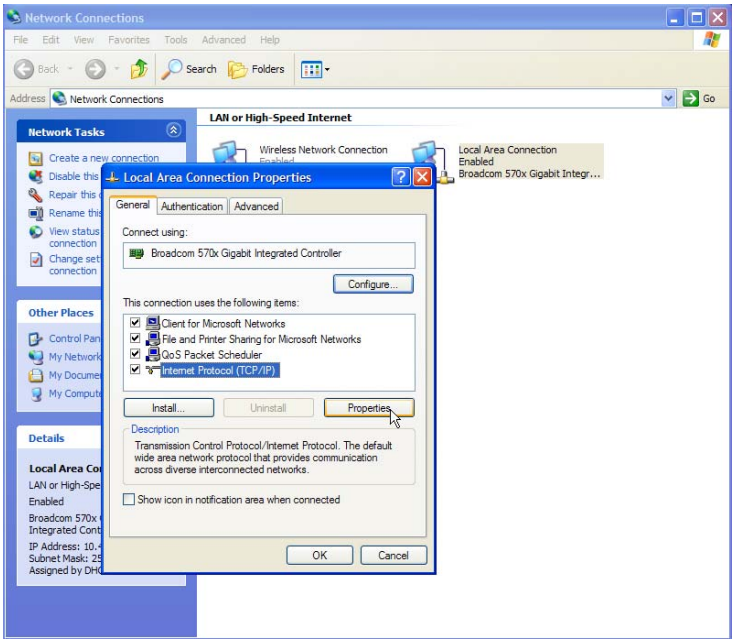
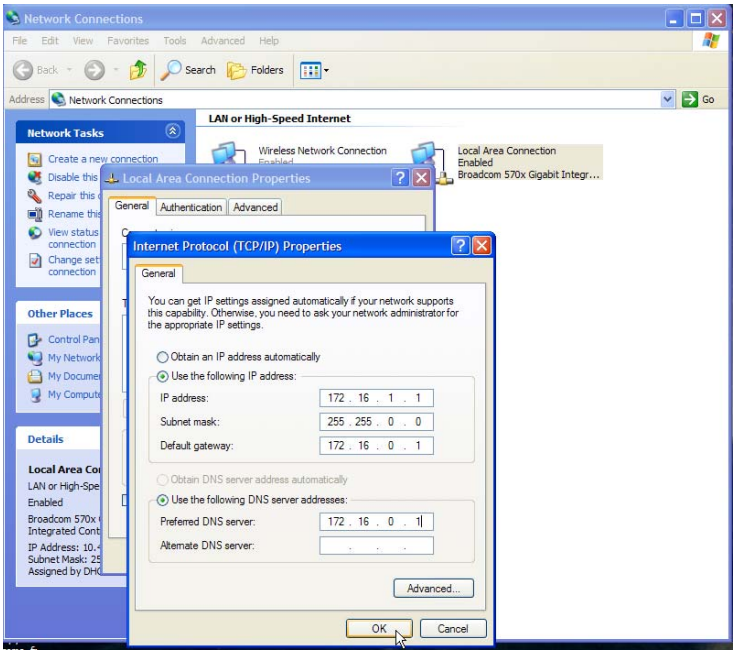
c. Click Internet Protocol (TCP/IP), then click the **Properties** button.



d. In the General tab, click the **Use the following IP address** radio button.
In the IP address field, enter an IP address between 172.16.1.1 to 172.16.1.32. In the Subnet mask field, enter 255.255.0.0. In the Default gateway and Preferred DNS server fields, enter 172.16.0.1.


Network Connections
Local Area Connection Properties
Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address: 172 . 16 . 1 . 1
Subnet mask: 255 . 255 . 0 . 0
Default gateway: 172 . 16 . 0 . 1
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server: 172 . 16 . 0 . 1
Alternate DNS server:
Advanced...
OK
Cancel

e. Click **OK**.

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f. If required, reboot the system for the changes to take effect.

2. Attach the computer to the Local Network port of the 2Wire gateway.
3. In the Web browser address bar, enter 172.16.0.1/management.
4. Click Configure Services.
5. Click the **Enable Routing** checkbox.
6. Click the **Submit Settings** button.

The gateway PPP, routing, and TCP/IP functions are now re-enabled, and the Local Network LED will turn Green. The computer can now be reset to a DHCP-assigned IP address, or left to obtain it statically.

Changing Timeout Parameters

By default, TCP and UDP are configured to timeout in 1,440 and 10 minutes, respectively. You can change the parameters by entering different values in the TCP Timeout and UDP Timeout fields, and then clicking the **Submit** button.

Enabling Broadband Status Notification

Note: This field will display only if the CMS organization has the Broadband Status Notification feature enabled.

To receive a notification message that the gateway has lost broadband connectivity and cannot access the Internet, check the **Enable** checkbox.

Enabling Missing DSL Filter Notification

Note: This field will display only if the CMS organization has the Missing DSL Filter Notification feature enabled.

To receive a notification message that the gateway has detected a missing DSL filter, check the **Enable** checkbox.

Enabling SIP Application Layer Gateway

To enable the SIP ALG on the gateway firewall, check the **Enable** checkbox.

Changing the Upstream MTU

The MTU (Maximum Transmission Unit) is the largest size packet or frame, specified in octets (eight-byte bits), that can be sent from a computer to the network. The 2Wire gateway's MTU varies, depending on the connection type used (for example, PPP or direct IP).

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To change the gateway's upstream MTU:

1. In the Force Upstream MTU field, enter the value specified by the service provider.
2. Click the **Submit** button.

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Advanced - Static Routes

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Advanced - Static Routes page allows you to manually configure static routes that specify the transmission path data must follow between devices on the gateway network.

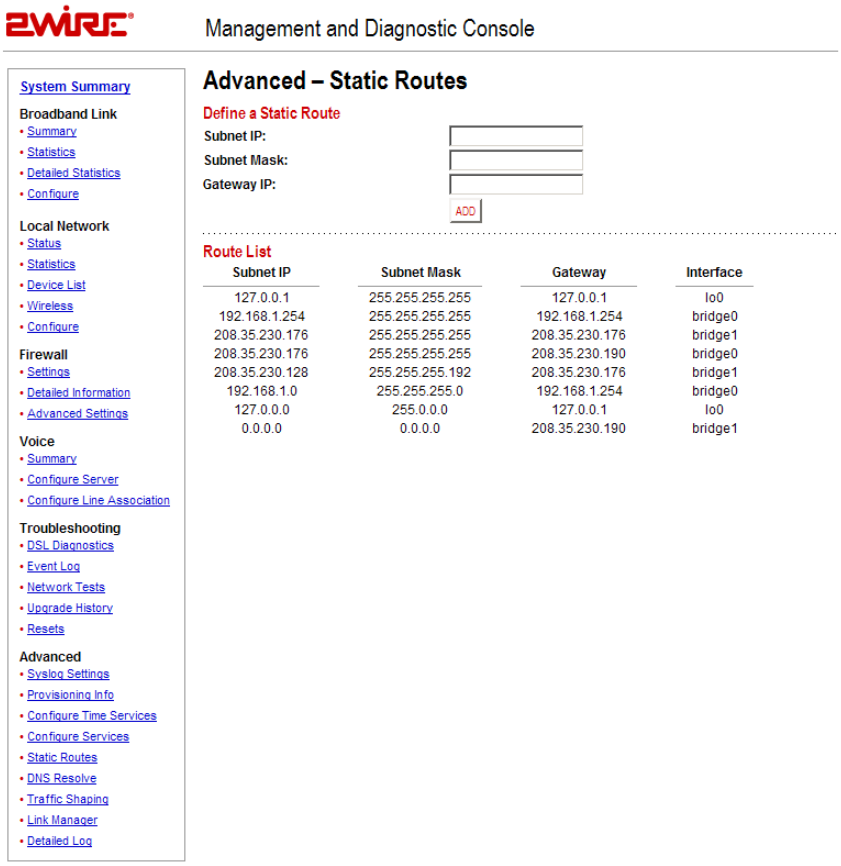

Figure 49. MDC Advanced Static Routes Page

To define a static route:

1. In the Subnet IP field, enter the IP address of the network to which you want to configure a static route.
2. In the Subnet Mask field, enter the subnet mask of the destination network.
3. In the Gateway IP field, enter the IP address of the router for the specified subnet.
4. Click the **Add** button.

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The Route List shows a list of static routes defined by the user. For each user-defined static route, the following information is displayed:

- Subnet IP
- Subnet Mask
- Gateway
- Interface

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Advanced - DNS Resolve Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Advanced - DNS Resolve page allows users to name network devices (such as printers or Web servers) so that they may be easily accessed by other users on the network.

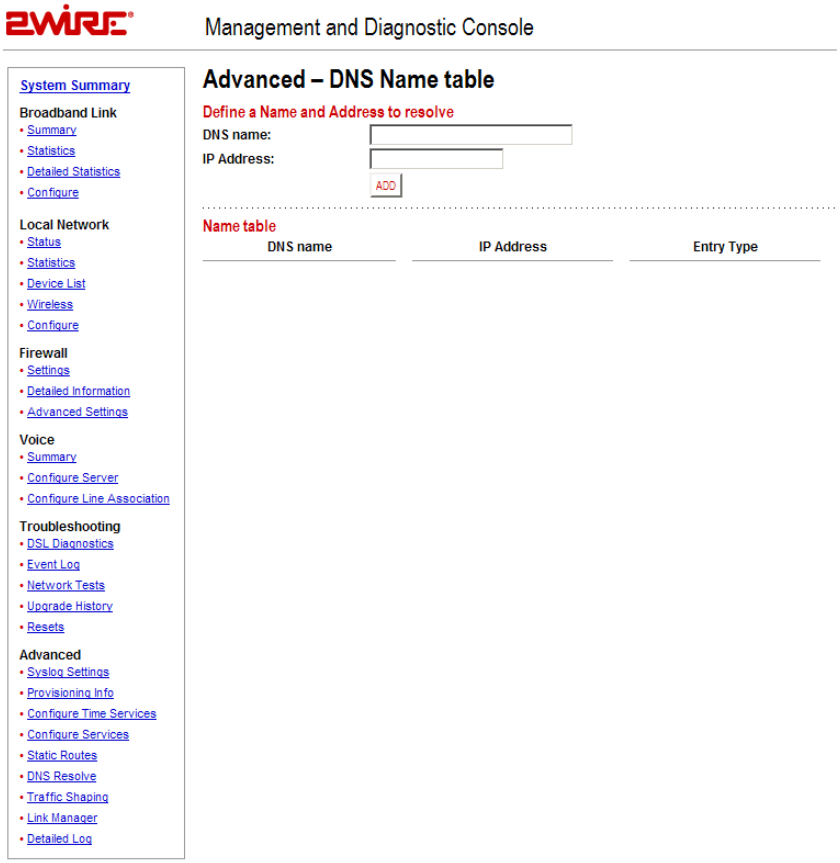

Figure 50. MDC Advanced DNS Name Table Page

To add entries to the Name table:

1. In the DNS name field, enter a name for the device.
2. In the IP Address field, enter the device's IP address.
3. Click **ADD**.
4. The Name table displays the name you defined for each device, the device's IP address, and the entry type. To remove the device from the Name table, click the **Remove** button.

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Advanced - Traffic Shaping Page

Note: To access this page, your organization must have the Remote Management feature enabled. If the feature is not enabled, an error message will display when you click the link to access this page.

The Advanced - Traffic Shaping page allows users to change the 2Wire gateway's maximum upstream connection rate.

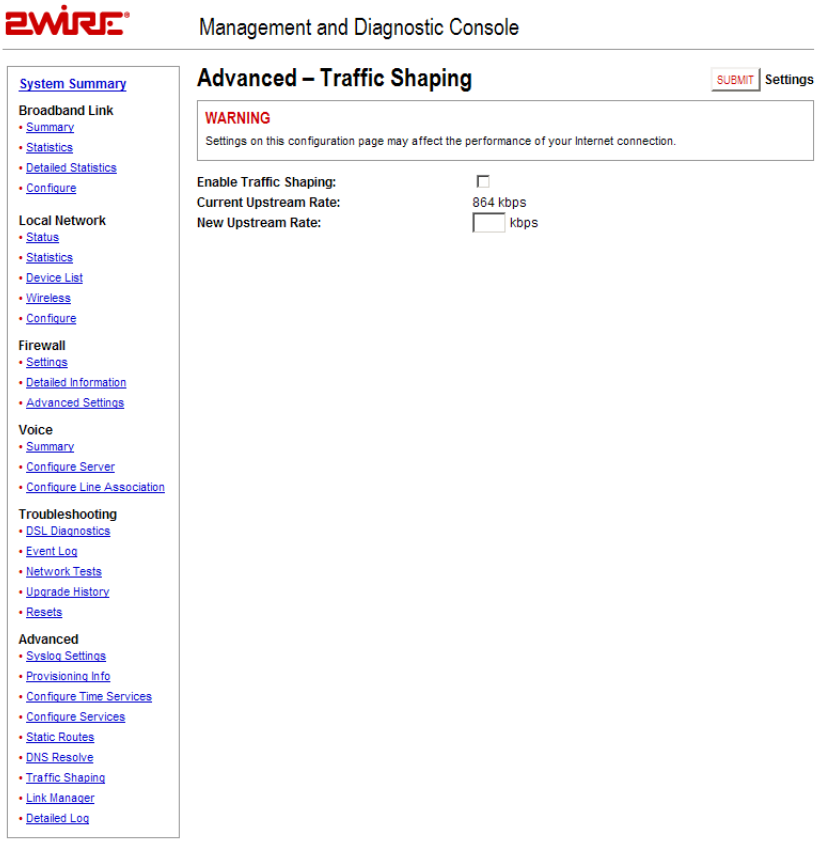

Figure 51. MDC Advanced Traffic Shaping Page

Warning: Modifying the gateway's configuration settings may impede or interrupt the user's broadband service, or violate the service provider's service level agreement.

To change the gateway's upstream connection rate:

1. Check the **Enable Traffic Shaping** checkbox.
2. In the New Upstream Rate field, enter the upstream rate at which you want the gateway to connect.
3. Click the **Submit** button.

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Advanced - Link Manager States Page

The Advanced – Link Manager States page is a tree representation of the 2Wire gateway interface stack, and shows the internal state of the 2Wire gateway.

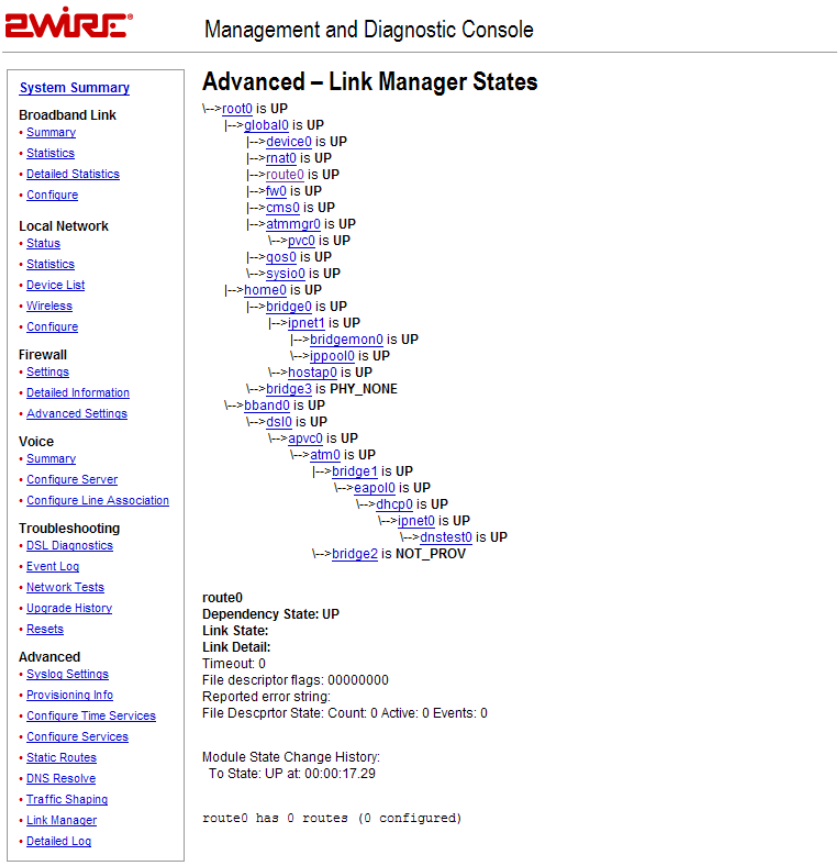

Figure 52. MDC Advanced Link Manager States Page

The Link Manager States page is used to gather dynamic information on internal networking modules, and is based on the runtime configuration of the 2Wire gateway. The information cannot be used to configure the 2Wire gateway.

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To view information about each node, click the node link. Information displays below the Link Manager States tree, and includes the following:

Node Information	Description
Link status	**Up.** The link is functioning properly. **Climbing.** The link is attempting to establish a connection. **Down.** The link is not yet configured. **Error.** An error has occurred.
State changes	The number of times the state of the link has changed (since last reboot).

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The following table shows the possible nodes that can display on the Link Manager States page.

Node	Description
root0	Root for configuration tree.
global0	Branch for all global configuration modules.
device0	Maintains the status and configuration for devices on the 2Wire gateway.
rnat0	Maintains the application mappings and pinholes for nodes on the 2Wire gateway.
route0	Maintains all static routes on the 2Wire gateway.
fw0	Maintains all firewall rules on the 2Wire gateway.
cms0	Monitors CMS connectivity and activity with the 2Wire gateway.
home0	Branch for the home network modules.
vlan0	Home network virtual LAN configuration module.
ipnet1	Home network IP configuration module.
vlanmon0	Home network virtual LAN monitor for activity.
ipbridge0	Home network IP bridge/DMZ configuration module.
ipnet2	Home network public IP network configuration module.
vlan3	Home network voice virtual LAN module.
bband0	Branch for the primary broadband network.
vlan1	Primary broadband virtual LAN configuration module.
dhcp0	Primary broadband DHCP client module.
ipnet0	Primary broadband IP configuration module.
dnstest0	Primary broadband DNS access test module.
vlan2	Primary broadband PPP bridge virtual LAN.
dsl0	DSL device control module.
apvc0	Primary broadband ATM and auto PVC search module.
pppoe0	Primary broadband PPPoE configuration module.
pppoa0	Primary broadband PPPoA configuration module.
rtatm0	Primary broadband routed ATM configuration module.

The nodes that display are dependent on the 2Wire gateway. For example, 2Wire gateways that are not connected to the Internet via ADSL will not display ADSL information.

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Advanced - Detailed Log Page

The Advanced – Detailed Log page is a debug log facility modeled after syslog, and provides advanced diagnostic capabilities.

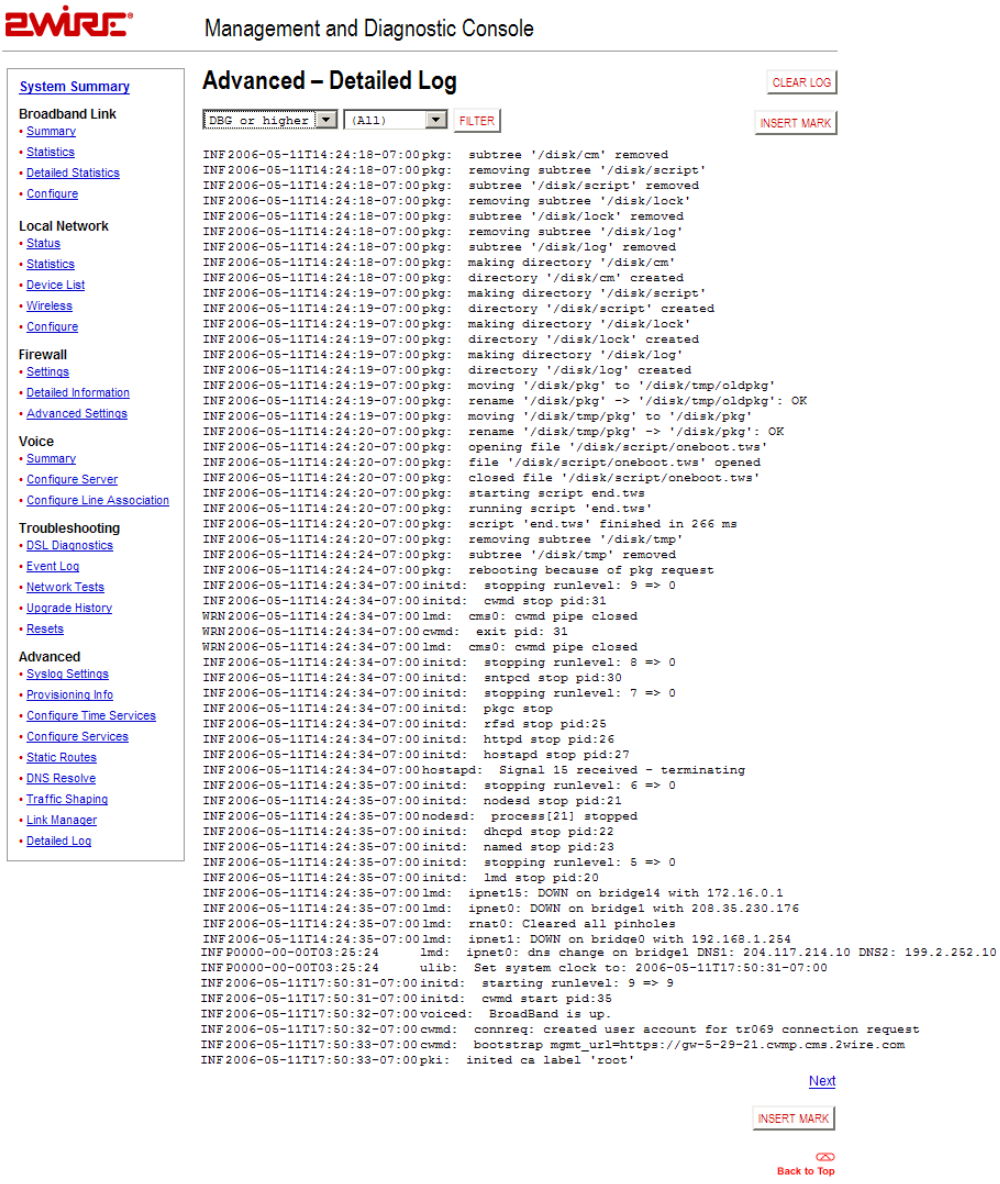
2WIRE
Management and Diagnostic Console
System Summary
Broadband Link
• Summary
• Statistics
• Detailed Statistics
• Configure
Local Network
• Status
• Statistics
• Device List
• Wireless
• Configure
Firewall
• Settings
• Detailed Information
• Advanced Settings
Voice
• Summary
• Configure Server
• Configure Line Association
Troubleshooting
• DSL Diagnostics
• Event Log
• Network Tests
• Upgrade History
• Resets
Advanced
• Syslog Settings
• Provisioning Info
• Configure Time Services
• Configure Services
• Static Routes
• DNS Resolve
• Traffic Shaping
• Link Manager
• Detailed Log
Advanced – Detailed Log
CLEAR LOG
DBG or higher
(All)
FILTER
INSERT MARK
INF 2006-05-11T14:24:18-07:00 pkg: subtree '/disk/cm' removed
INF 2006-05-11T14:24:18-07:00 pkg: removing subtree '/disk/script'
INF 2006-05-11T14:24:18-07:00 pkg: subtree '/disk/script' removed
INF 2006-05-11T14:24:18-07:00 pkg: removing subtree '/disk/lock'
INF 2006-05-11T14:24:18-07:00 pkg: subtree '/disk/lock' removed
INF 2006-05-11T14:24:18-07:00 pkg: removing subtree '/disk/log'
INF 2006-05-11T14:24:18-07:00 pkg: subtree '/disk/log' removed
INF 2006-05-11T14:24:18-07:00 pkg: making directory '/disk/cm'
INF 2006-05-11T14:24:18-07:00 pkg: directory '/disk/cm' created
INF 2006-05-11T14:24:19-07:00 pkg: making directory '/disk/script'
INF 2006-05-11T14:24:19-07:00 pkg: directory '/disk/script' created
INF 2006-05-11T14:24:19-07:00 pkg: making directory '/disk/lock'
INF 2006-05-11T14:24:19-07:00 pkg: directory '/disk/lock' created
INF 2006-05-11T14:24:19-07:00 pkg: making directory '/disk/log'
INF 2006-05-11T14:24:19-07:00 pkg: directory '/disk/log' created
INF 2006-05-11T14:24:19-07:00 pkg: moving '/disk/pkg' to '/disk/tmp/oldpkg'
INF 2006-05-11T14:24:19-07:00 pkg: rename '/disk/pkg' -> '/disk/tmp/oldpkg': OK
INF 2006-05-11T14:24:19-07:00 pkg: moving '/disk/tmp/pkg' to '/disk/pkg'
INF 2006-05-11T14:24:20-07:00 pkg: rename '/disk/tmp/pkg' -> '/disk/pkg': OK
INF 2006-05-11T14:24:20-07:00 pkg: opening file '/disk/script/oneboot.tws'
INF 2006-05-11T14:24:20-07:00 pkg: file '/disk/script/oneboot.tws' opened
INF 2006-05-11T14:24:20-07:00 pkg: closed file '/disk/script/oneboot.tws'
INF 2006-05-11T14:24:20-07:00 pkg: starting script end.tws
INF 2006-05-11T14:24:20-07:00 pkg: running script 'end.tws'
INF 2006-05-11T14:24:20-07:00 pkg: script 'end.tws' finished in 266 ms
INF 2006-05-11T14:24:20-07:00 pkg: removing subtree '/disk/tmp'
INF 2006-05-11T14:24:24-07:00 pkg: subtree '/disk/tmp' removed
INF 2006-05-11T14:24:24-07:00 pkg: rebooting because of pkg request
INF 2006-05-11T14:24:34-07:00 initd: stopping runlevel: 9 => 0
INF 2006-05-11T14:24:34-07:00 initd: cwmd stop pid:31
WRN 2006-05-11T14:24:34-07:00 lmd: cms0: cwmd pipe closed
WRN 2006-05-11T14:24:34-07:00 cwmd: exit pid: 31
WRN 2006-05-11T14:24:34-07:00 lmd: cms0: cwmd pipe closed
INF 2006-05-11T14:24:34-07:00 initd: stopping runlevel: 8 => 0
INF 2006-05-11T14:24:34-07:00 initd: sntpcd stop pid:30
INF 2006-05-11T14:24:34-07:00 initd: stopping runlevel: 7 => 0
INF 2006-05-11T14:24:34-07:00 initd: pkgc stop
INF 2006-05-11T14:24:34-07:00 initd: rfsd stop pid:25
INF 2006-05-11T14:24:34-07:00 initd: httpd stop pid:26
INF 2006-05-11T14:24:34-07:00 initd: hostapd stop pid:27
INF 2006-05-11T14:24:34-07:00 hostapd: Signal 15 received - terminating
INF 2006-05-11T14:24:35-07:00 initd: stopping runlevel: 6 => 0
INF 2006-05-11T14:24:35-07:00 initd: nodesd stop pid:21
INF 2006-05-11T14:24:35-07:00 nodesd: process[21] stopped
INF 2006-05-11T14:24:35-07:00 initd: dhcpd stop pid:22
INF 2006-05-11T14:24:35-07:00 initd: named stop pid:23
INF 2006-05-11T14:24:35-07:00 initd: stopping runlevel: 5 => 0
INF 2006-05-11T14:24:35-07:00 initd: lmd stop pid:20
INF 2006-05-11T14:24:35-07:00 lmd: ipnet15: DOWN on bridge14 with 172.16.0.1
INF 2006-05-11T14:24:35-07:00 lmd: ipnet0: DOWN on bridge1 with 208.35.230.176
INF 2006-05-11T14:24:35-07:00 lmd: rnat0: Cleared all pinholes
INF 2006-05-11T14:24:35-07:00 lmd: ipnet1: DOWN on bridge0 with 192.168.1.254
INF P0000-00-00T03:25:24 lmd: ipnet0: dns change on bridge1 DNS1: 204.117.214.10 DNS2: 199.2.252.10
INF P0000-00-00T03:25:24 ulib: Set system clock to: 2006-05-11T17:50:31-07:00
INF 2006-05-11T17:50:31-07:00 initd: starting runlevel: 9 => 9
INF 2006-05-11T17:50:31-07:00 initd: cwmd start pid:35
INF 2006-05-11T17:50:32-07:00 voiced: BroadBand is up.
INF 2006-05-11T17:50:32-07:00 cwmd: connreq: created user account for tr069 connection request
INF 2006-05-11T17:50:33-07:00 cwmd: bootstrap mgmt_url=https://gw-5-29-21.cwmp.cms.2wire.com
INF 2006-05-11T17:50:33-07:00 pki: inited ca label 'root'
Next
INSERT MARK
Back to Top

Figure 53. MDC Advanced Detailed Log Page

Note: The Detailed Log retains a persistent (across upgrades and system restarts) record of gateway events.

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From the **Filter** pull-down menus, you can select the level of filtering you want to view (for example, DBG or higher) and the specific gateway component that was affected. Each log displays the following information:

- Status level: DBG (debug), INF (informational), NTC (notice), WRN (warning), ERR (error), FTL (fatal), ALR (alarm), or EMR (emergency).
- Timestamp (in days, hours, minutes, and seconds) since the state occurred. A "+" preceding the timestamp designates that the timestamp occurred upon system startup. A time zone (such as "GMT") following the timestamp designates that the timestamp occurred after system startup.
- Module in which the state occurred (for example, "netdev").
- Description of the log entry.

When you click **Insert Mark**, a "placeholder" is inserted into the code string to mark where the error was found.

The following table lists the filters that can be applied.

Filter	Description
(All)	All log messages
aaal5	ATM AAL5 encapsulation
algaim	AOL Instant Messenger ALG
algesp	IPSec ESP ALG
algh323	H323 ALG
alghttp	HTTP ALG
algintt	Intoto Wrapper ALG
algmsgame	Microsoft Game ALG
algmsn	MSN Messenger ALG
algpptp	PPTP ALG
algrtp	RTP ALG
algrtsp	RTSP ALG
algsip	SIP ALG
algww	Kineto QoS ALG
amon	Application monitoring issues
atm	ATM stack
cm	Configuration Manager/configuration database
devfs	Device files system

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Filter	Description
dhcpd	DHCP server
dsl	DSL modem and DSL control module
dslice	DSL hardware
eth	Ethernet device
ethatm	Ethernet to ATM bridge (1483)
fw	Firewall
gpio	GPIO (general purpose input/output) device
hostapd	Wireless access point daemon
hpna	HPNA interface
httpd	HTTP daemon
initd	Initd daemon logs for application control
ipsess	IP firewall session
jtag	JTAG device
kacct	Kernel accounting
kelog	Kernel event log module
kmem	Memory
kppp	PPP kernel network module
kpppoa	PPPoA kernel network module
kpppoe	PPPoE kernel network module
krtlock	Thread locking
kthread	Thread
led	LED device
lmd	Link Manager daemon logs for module
login	Login application
lwdp	Lightweight data protocol (VoHPNA)
mdog	Hardware watchdog
msig	Machine signal-related
named	DNS server

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Filter	Description
netdev	Network device core
nodesd	Network device status daemon
pdump	Packet dump (used for debugging)
pkg	Package management
pki	Public Key Infrastructure subsystem
ppp	Point-to-Point Protocol daemon
reset	Reset switch driver
rpcd	RPCD daemon logs for CMS interaction
rtatm	Routed ATM driver
scc	Voice SLIC drivers
sip	SIP
sntpc	Network time client
stream	Stream network core
syslog	Syslog daemon
system	System level
ulib	Configuration libraries
usbd	USB device
usbhost	USB host
vlan	Virtual LAN
voh	VoHPNA driver
voiced	Voice daemon
voip	Voice over IP
vr	Voice router
vrsip	Voice SIP module
wave	Wireless device

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Glossary

A

Access Point. A device that transports data between a wireless network and a wired network. With the help of the system, a wireless base station is an example of an access point that acts between a wireless node and with other wired PCs and peripherals.

D

Default Gateway. A device that is placed between network segments (or “subnets”) to ensure that traffic is properly routed between different subnets. To communicate with a device on another network, users need to know the default gateway’s IP address.

DHCP (Dynamic Host Configuration Protocol). A TCP/IP protocol that allows servers to assign IP addresses dynamically to PCs and workstations. The PC or workstation “borrows” the IP address for a period of time, then the IP address returns to the DHCP server for reassignment.

DMZ (Demilitarized Zone). A computer or small subnetwork that sits between a trusted internal network (such as a LAN), and an untrusted external network (such as the Internet). Typically, the DMZ contains devices accessible to Internet traffic, such as Web (HTTP) servers, FTP servers, SMTP (e-mail) servers and DNS servers.

DNS (Domain Name System). The DNS is the way that Internet domain names (such as www.2wire.com) are located and translated into IP addresses.

DSLAM (Digital Subscriber Line Access Multiplexer). A device found in telephone company central offices that takes a number of DSL subscriber lines and concentrates them onto a single ATM line.

E

Ethernet. A type of local area network that operates over twisted wire and cable at speeds of up to 10 Mbps.

I

ICMP (Internet Control Message Protocol). ICMP supports packets containing error, control, and informational messages. For example, the PING command uses ICMP to test an Internet connection. Although ICMP is generally harmless, there are some message types that should be dropped. Redirect (5), Alternate Host Address (6), and Router Advertisement (9) can be used to redirect traffic from your site. Echo (8), Timestamp (13), and Address Mask Request (17) can be used to obtain information on whether the host is up, the local time, and the address mask used on your network, respectively. ICMP messages are also sometimes used as part of DOS attacks (such as flood ping or ping of death).

Invalid TCP flags. Combination of TCP flags (such as SYN/FIN) that signal a malicious attempt to get past the firewall.

IP (Internet Protocol). The standard signaling method used for all communication over the Internet.

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IP Address. A numeric identifier for your computer. Just as the post office delivers mail to your home address, servers know to deliver data to your computer based on your IP address. IP addresses can be dynamic, meaning that your computer “borrows” the IP address for the necessary timeframe, or they can be fixed, meaning that the number is permanently assigned to your computer.

L

LAN (Local Area Network). A network connecting a number of computers to each other or to a central server so that the computers can share programs and files.

M

MAC (Media Access Control) Address. A hardware address that has been embedded into the network interface card (NIC) by its vendor to uniquely identify each node, or point of connection, of a network.

Map to Host Port. When set (not left blank or set to 0), this value provides the mapping offset to the local computer. For example, if this value is set to 4000 and the range being opened is 100 to 108, the forwarded data to the first value in the range will be sent to 4000. Subsequent ports will be mapped accordingly; 101 will be sent to 4001, 102 will be sent to 4002, etc.

MTU (maximum transmission unit). The largest size packet or frame, specified in octets (eight-bit bytes), that can be sent from a computer to the network. The Internet's TCP uses the MTU to determine the maximum size of each packet in any transmission. If the MTU is too large, the packet may need to be retransmitted if it encounters a router that can't handle that large a packet. Too small an MTU size means relatively more header overhead and more acknowledgements that have to be sent and handled. Most computer operating systems provide a default MTU value that is suitable for most users. In general, Internet users should follow the advice of their Internet service provider (ISP) about whether to change the default value and what to change it to.

N

NAT (Network Address Translation). Enables a LAN to use one set of IP addresses for internal traffic and a second set of IP addresses for external traffic. This feature is used by the system so an end user can have an internal computer network in their home, with all its computers using internal IP addresses, using only one routable IP address, which accesses the outside (Internet).

P

PAT (Port Address Translation). Allows hosts on a LAN to communicate with the rest of a network (such as the Internet) without revealing their own private IP address. All outbound packets have their IP address translated to the router’s external IP address. Replies come back to the router, which then translates them back into the private IP address of the original host for final delivery.

PPP (Point-to-Point Protocol). A protocol that allows a computer to access the Internet using a dial-up phone line and a high-speed modem. This can be accomplished over Ethernet (PPPoE), or over Asynchronous Transfer Mode (ATM; PPPoA).

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PPPoA (Point-to-Point Protocol over ATM). A specification for connecting multiple computer users on an Ethernet LAN to a remote site through common customer premises equipment (such as a modem). PPPoA combines the Point-to-Point Protocol (PPP), commonly used in dialup connections, with the ATM (Asynchronous Transfer Mode) protocol, which supports multiple users in a LAN.

PPPoE (Point-to-Point Protocol over Ethernet). A specification for connecting multiple computer users on an Ethernet LAN to a remote site through common customer premises equipment (such as a modem). PPPoE combines the Point-to-Point Protocol (PPP), commonly used in dialup connections, with the Ethernet protocol, which supports multiple users in a LAN.

Protocol Timeout. The amount of time (in seconds) during which a connection in the specified range remains open when there is no data transfer. After a connection has been established on a given port, the sender and receiver usually determine when the session is finished and the connection is closed. However, if the connection is left open and data transfer stops, the system must eventually close the connection and reclaim the resources in order to protect your network. In some cases, the system might close the application during normal operation (for example, if there is a long pause between data transfer). If this is the case, lengthening the timeout may help.

PVC (permanent virtual circuit). A virtual circuit that is permanently available. Used to establish connections between hosts that communicate frequently.

R

Router. The central switching device in a packet-switched computer network that directs and controls the flow of data through the network.

S

Subnet Mask. The IP addressing system allows subnetworks or “interchanges” to be created, and devices numbers or “extensions” to be established within these subnetworks. These numbers are created using a mathematical device called a subnet mask. A subnet mask, like the IP address, is a set of four numbers in dotted decimal notation. Subnet masks typically take three forms:

- 255.0.0.0
- 255.255.0.0
- 255.255.255.0

The number 255 “masks” out the corresponding number of the IP address, resulting in IP address numbers that are valid for the network. For example, an IP address of 123.45.67.89 and a subnet mask of 255.255.255.0 results in a sub network number of 123.45.67.0 and a device number of 89.

The subnet mask used for the network typically corresponds to the class of IP address assigned, as shown in the following table.

IP Address Class	Dotted-Decimal Notation Ranges	Corresponding Subnet Mask
Class A	1.xxx.xxx.xxx to 126.xxx.xxx.xxx	255.0.0.0
Class B	128.0.xxx.xxx to 191.255.xxx.xxx	255.255.0.0
Class C	192.0.0.xxx to 223.255.255.xxx	255.255.255.0

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SYN Flood. A method that the user of a hostile client program can use to conduct a denial-of-service (DOS) attack on a computer server. The hostile client repeatedly sends SYN (synchronization) packets to every port on the server, using fake IP addresses.

T

TCP/IP (Transmission Control Protocol/Internet Protocol). A method of packet-switched data transmission used on the Internet. The protocol specifies the manner in which a signal is divided into parts, as well as the manner in which "address" information is added to each packet to ensure that it reaches its destination and can be reassembled into the original message.

Transmission Control Protocol/Internet Protocol (TCP/IP). See TCP/IP.

U

UDP (User Datagram Protocol). A TCP/IP protocol describing how data packets reach application programs within a destination computer.

V

VPI (Virtual Path Identifier). Identifier contained in the ATM cell header to designate the virtual path on the physical ATM link.

VCI (Virtual Channel Identifier). Identifier contained in the ATM cell header to designate the virtual channel on the physical ATM link.

W

Wireless. Transmission of data over radio waves rather than wiring.

Wireless channel. The 2Wire gateway supports up to 13 wireless channels (based on country restrictions). For example, the United States and Canada support channels 1 to 11; Europe and Australia support channels 1 to 13.

In an 802.1b or 802.11g wireless network, data is transmitted at 2.5GHz. Wireless nodes communicate with each other using radio frequency signals in the band between 2.4GHz and 2.5GHz. Neighboring channels are 5 MHz apart; however, due to the spread spectrum effect of the signals, a node sending signals using a particular channel will use frequency spectrum 12.5HHz above and below the center channel frequency. As a result, two separate wireless networks using neighboring channels (for example, channels 1 and 2) in the same general vicinity will interfere with each other. Applying two channels that allow the maximum channel separation (such as channels 1 and 6, or channels 6 and 11) will provide a noticeable performance increase over networks with minimal channel separation.

The radio frequency channels used in 802.11b/g networks are shown in the following table.

Channel	Range
Channel 1	2399.5 MHz - 2424.5 MHz
Channel 2	2404.5 MHz - 2429.5 MHz

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Channel	Range
Channel 3	2409.5 MHz - 2434.5 MHz
Channel 4	2414.5 MHz - 2439.5 MHz
Channel 5	2419.5 MHz - 2444.5 MHz
Channel 6	2424.5 MHz - 2449.5 MHz
Channel 7	2429.5 MHz - 2454.5 MHz
Channel 8	2434.5 MHz - 2459.5 MHz
Channel 9	2439.5 MHz - 2464.5 MHz
Channel 10	2444.5 MHz - 2469.5 MHz
Channel 11	2449.5 MHz - 2474.5 MHz
Channel 12	2454.5 MHz - 2479.5 MHz
Channel 13	2459.5 MHz - 2484.5 MHz

The preferred channel separation between the channels in neighboring wireless networks is 25 MHz (5 channels). This means that you can apply up to three different channels within your wireless network. There are only 11 usable wireless channels in the United States. It is recommended that you start using channel 1 and expand to channel 6 (and 11 when necessary), as these three channels do not overlap.

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Regulatory Information

Declaration of Conformity

Trade Name: 2Wire
Responsible Party: 2Wire, Inc.
Address: 1704 Automation Parkway
San Jose, CA

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Only peripherals (computer input/output devices, terminals, printers, and so forth) that comply with FCC Class B limits may be attached to this computer product.

Operation with noncompliant peripherals is likely to result in interference to radio and television reception.

All cables used to connect peripherals must be shielded and grounded. Operation with cables, connected to peripherals that are not shielded and grounded may result in interference to radio and television reception.

WARNING: While this device is in operation, a separation distance of at least 20 cm (8 inches) must be maintained between the radiating antenna inside the ERU and the bodies of all persons exposed to the transmitter in order to meet the FCC RF exposure guidelines. Making changes to the antenna or the device is not permitted. Doing so may result in the installed system exceeding RF exposure requirements. This device must not be co-located or operated in conjunction with any other antenna or radio transmitter. Installers and end users must follow the installation instructions provided in this guide.

FCC Part 68

This equipment complies with Part 68 of the FCC rules. On the bottom of this equipment is a label that contains, among other information, the FCC equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five. To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

If the terminal equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operations of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact the store, reseller, or agent from whom the product was purchased.

Repair of this equipment should be made only by the 2Wire Service Center or a 2Wire authorized agent.

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